

JANE'S FIGHTING SHIPS

1929

FOUNDED IN 1897 BY FRED T. JANE.
THIRTY-THIRD YEAR OF ISSUE.



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1929

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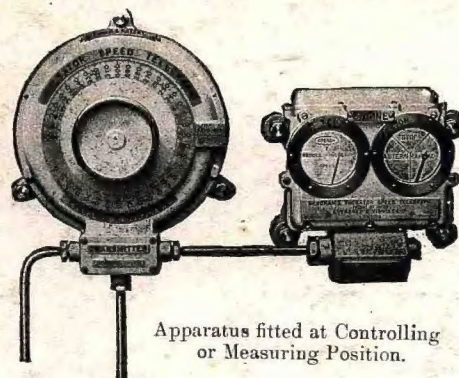
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pressure. Can also be
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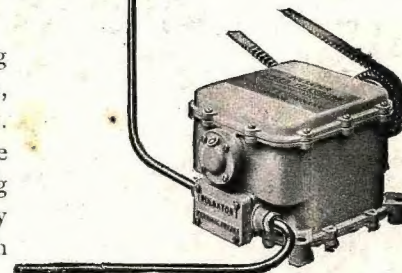
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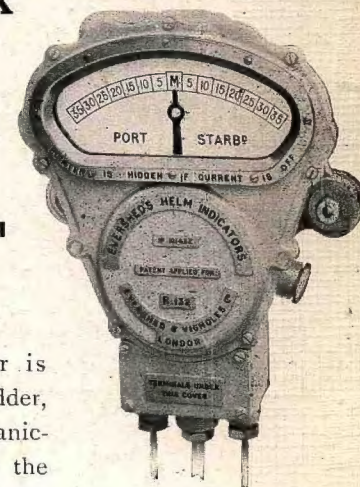
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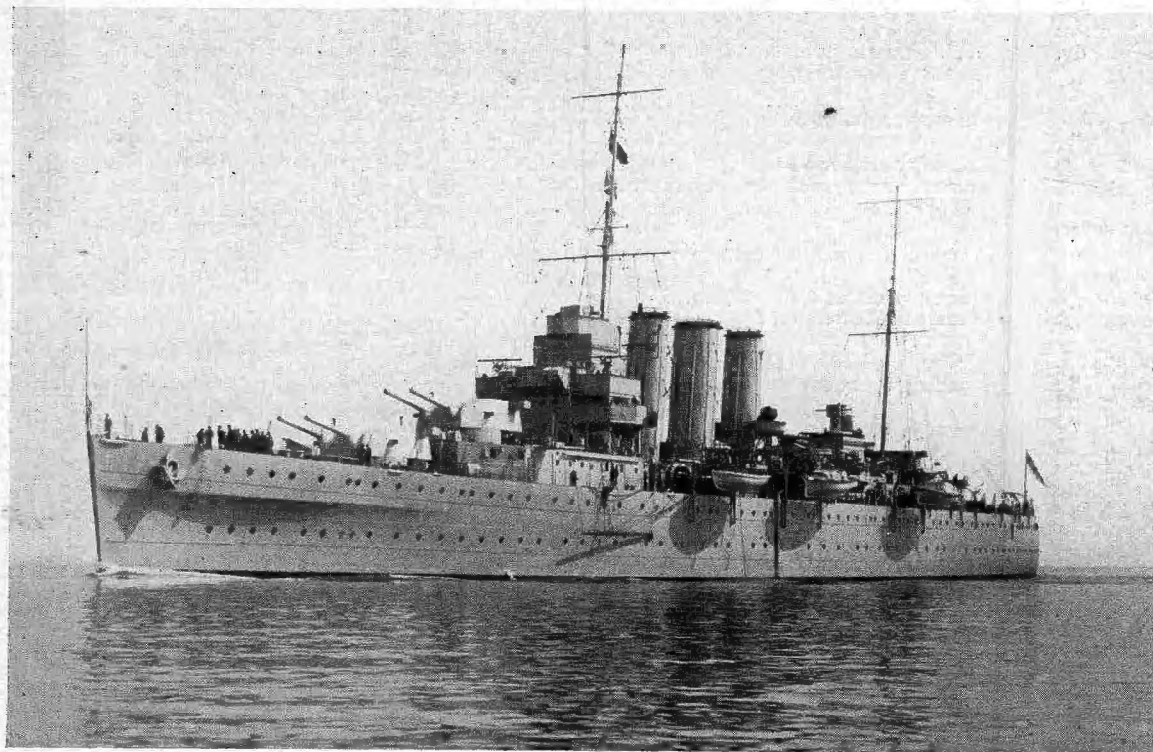
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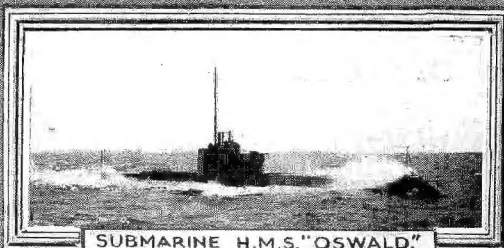
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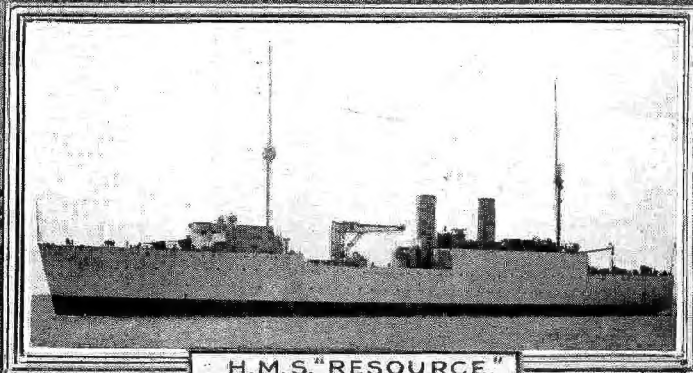
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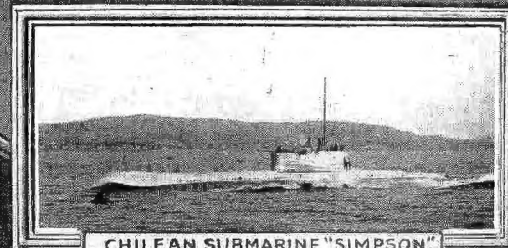
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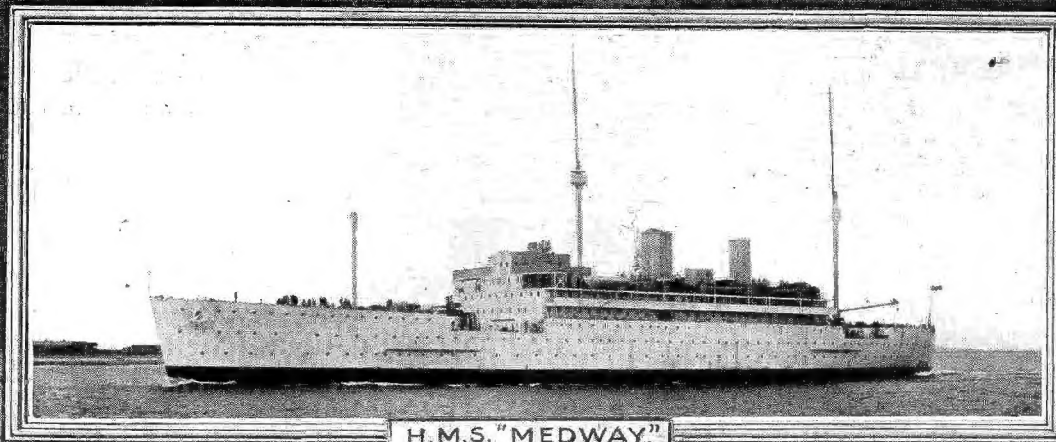


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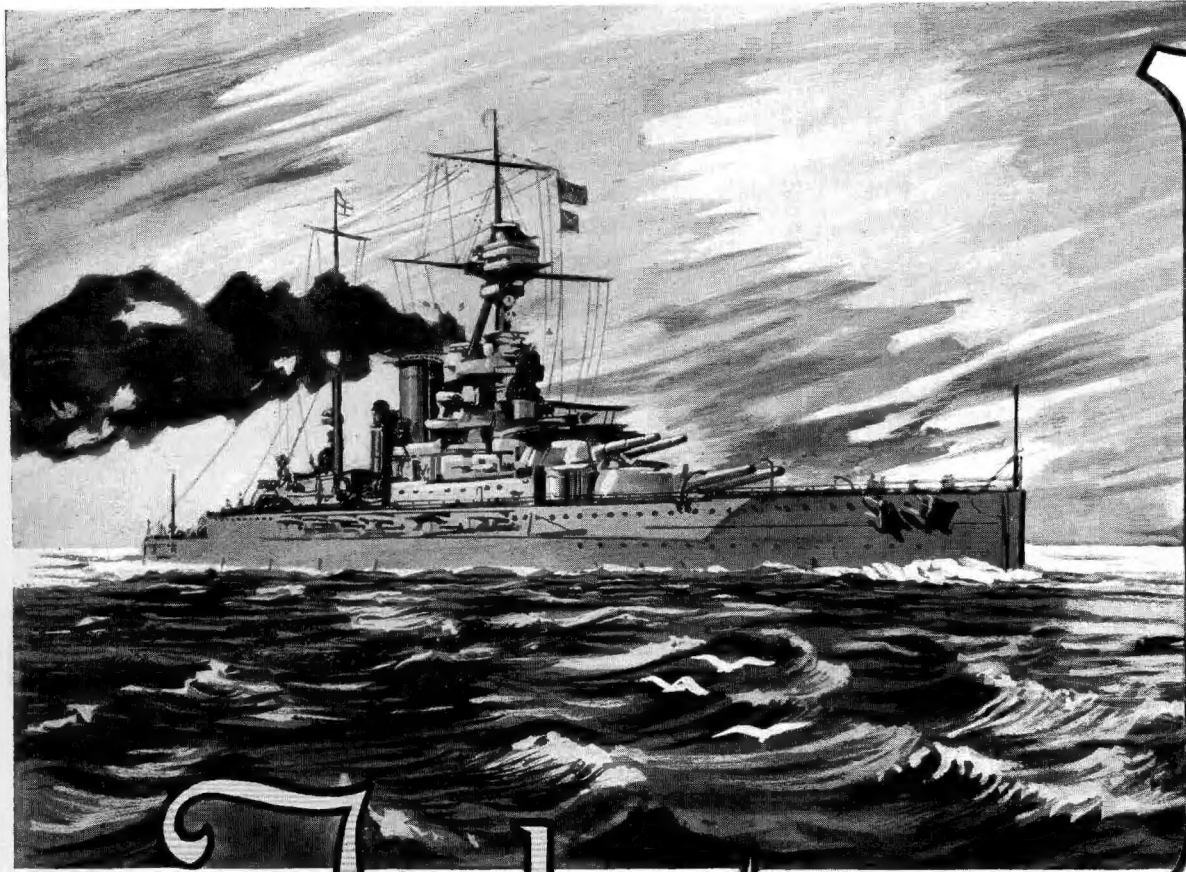
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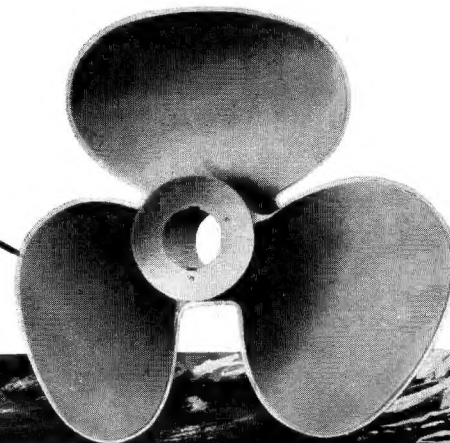
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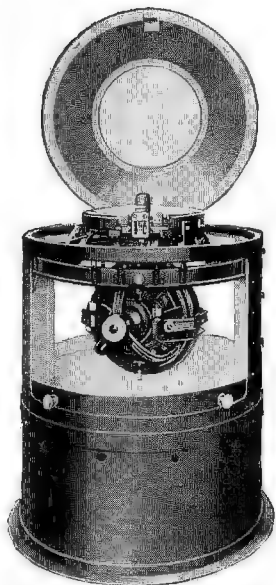
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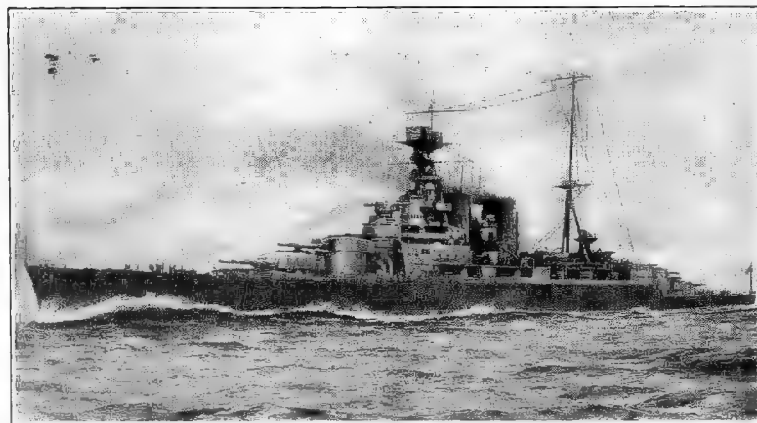
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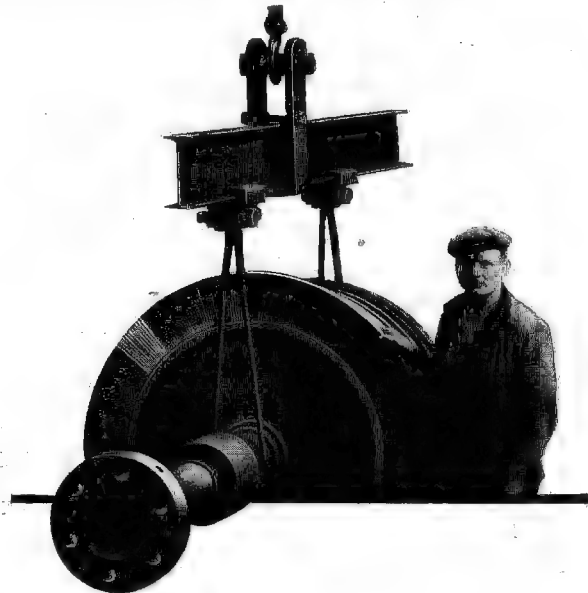
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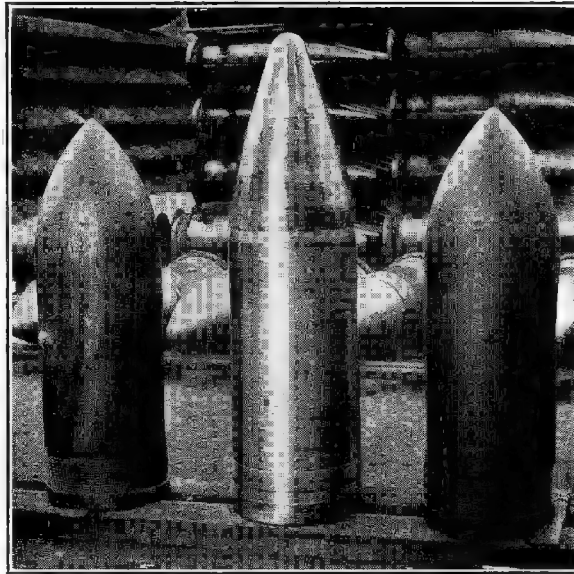
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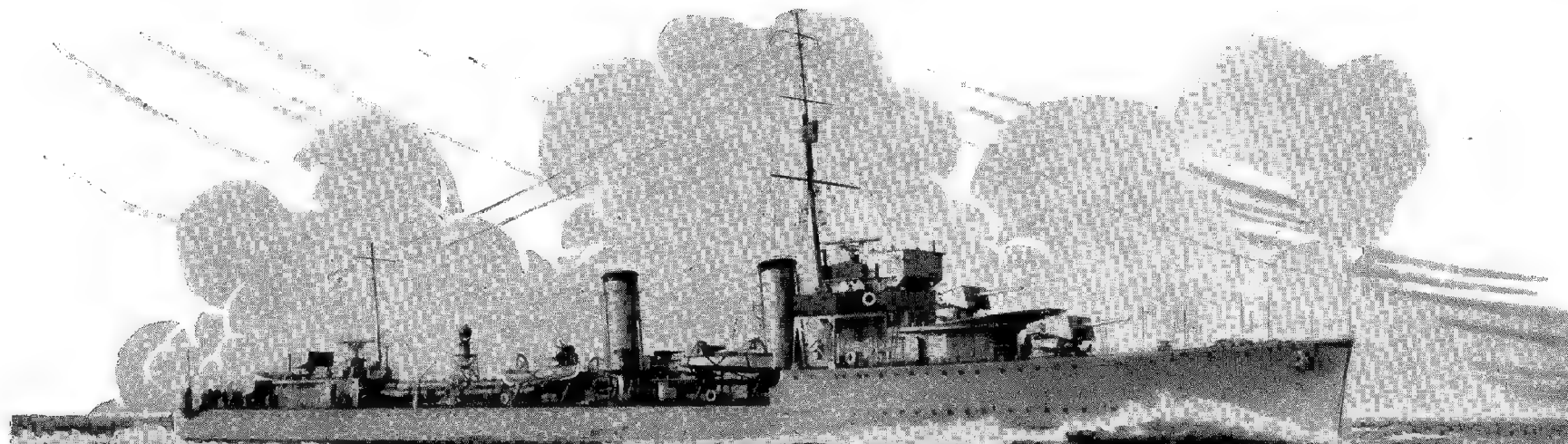
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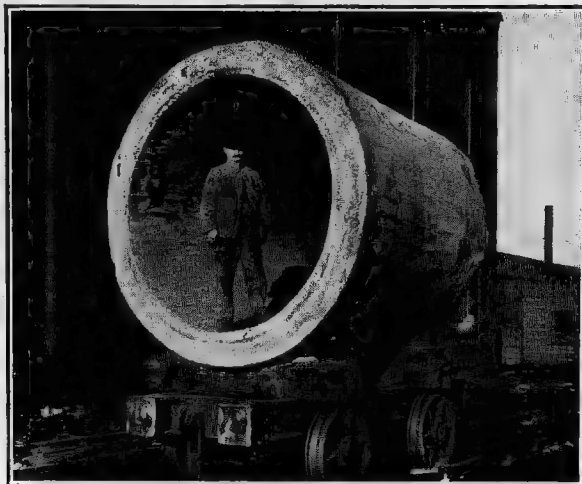
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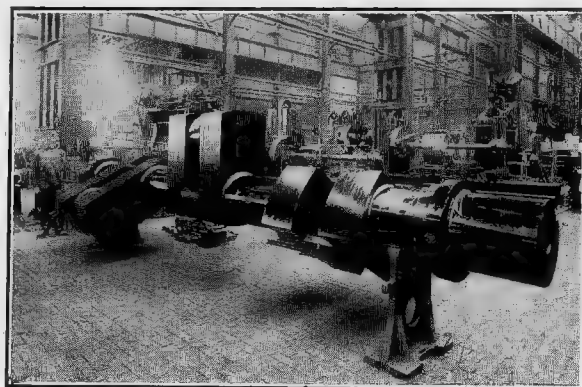
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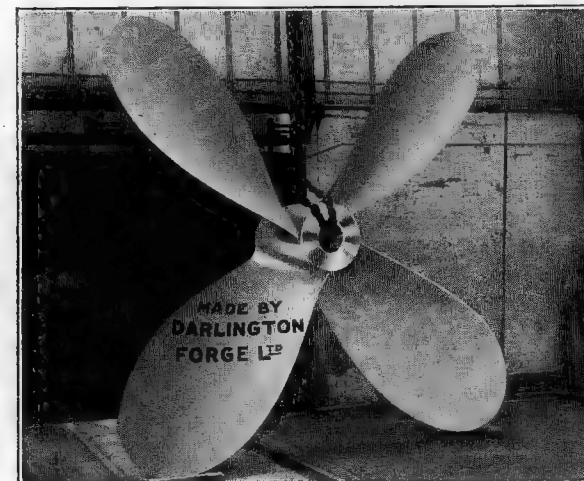
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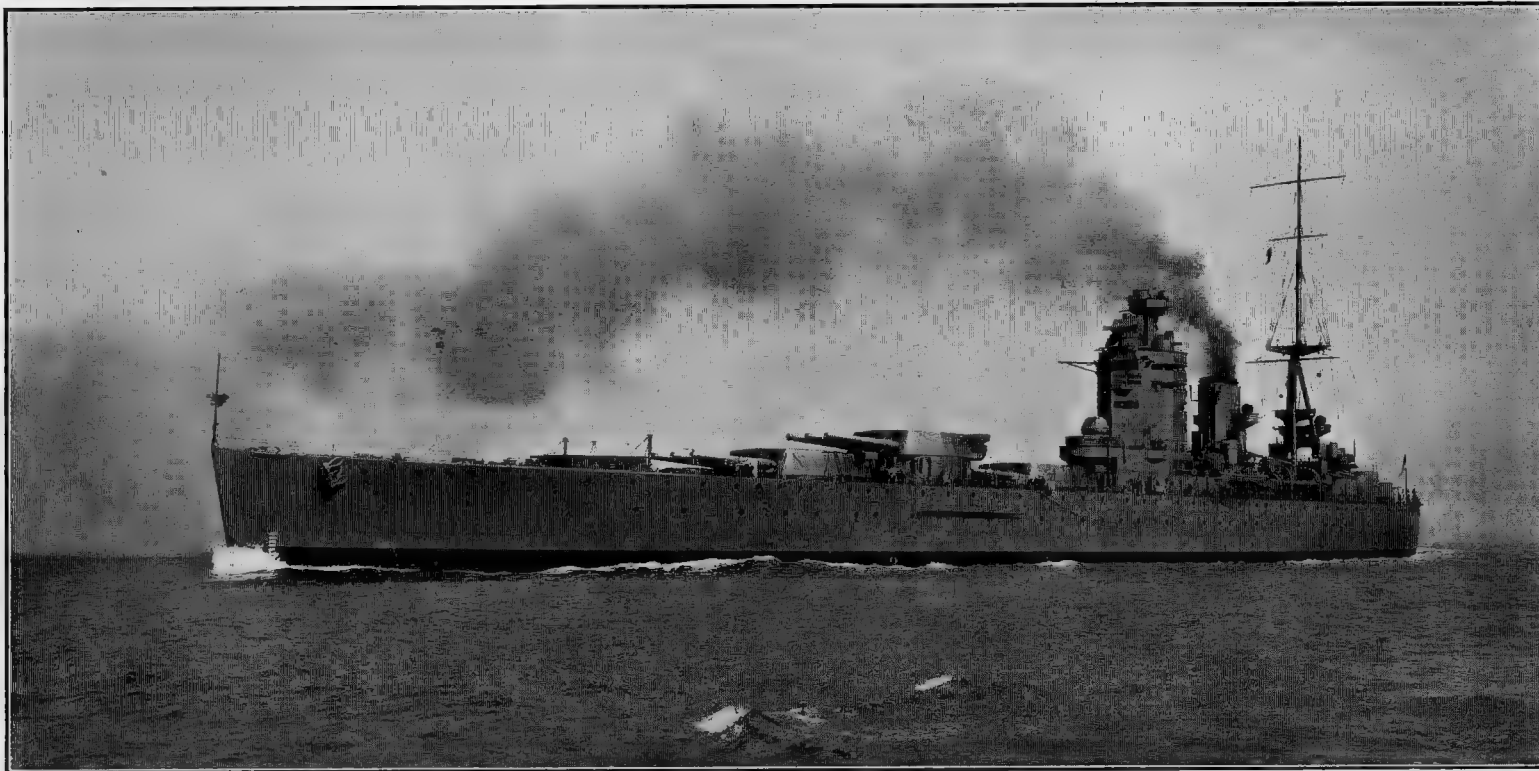


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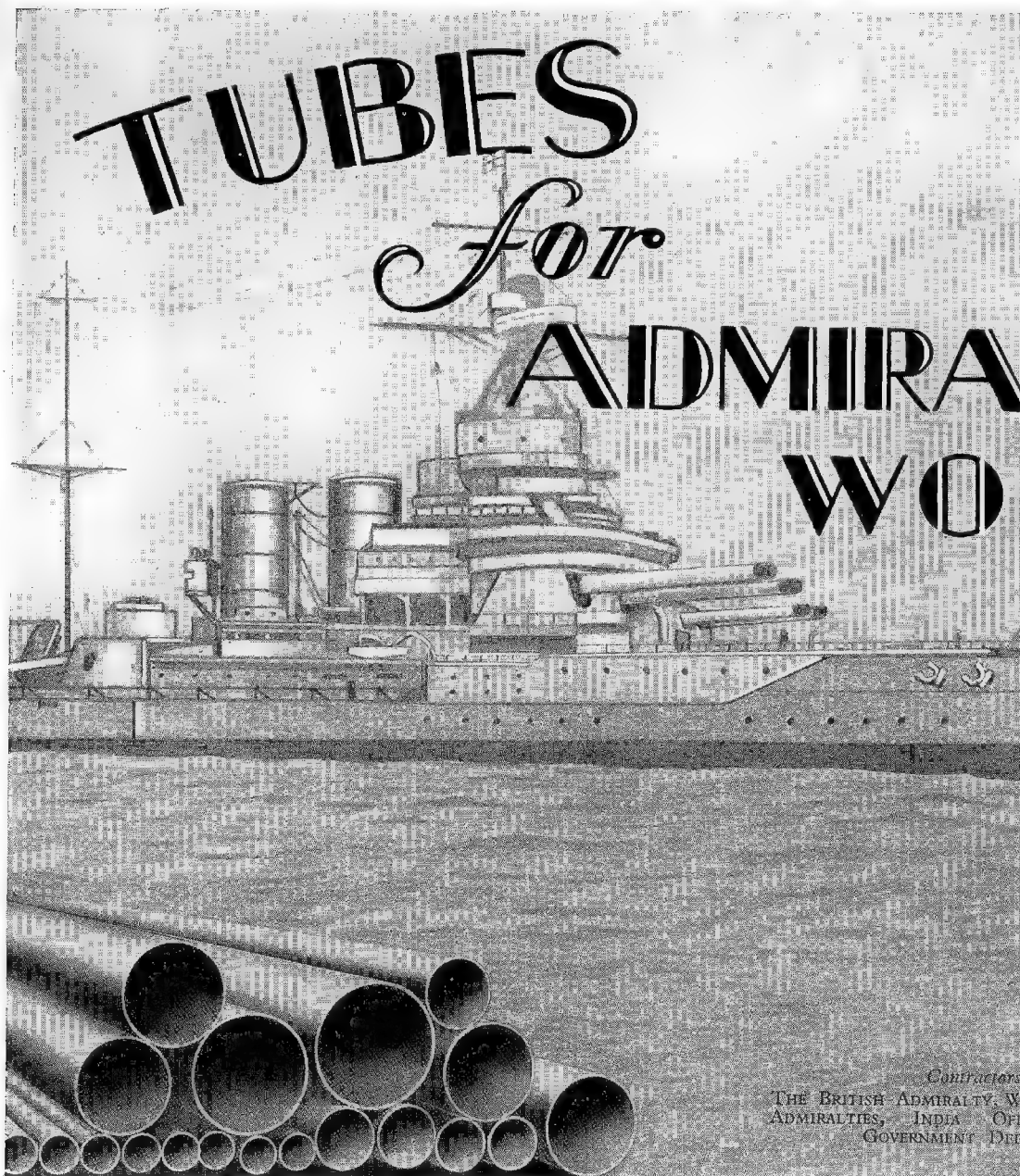
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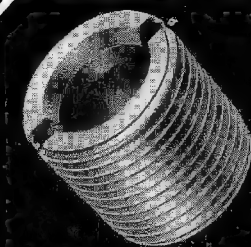
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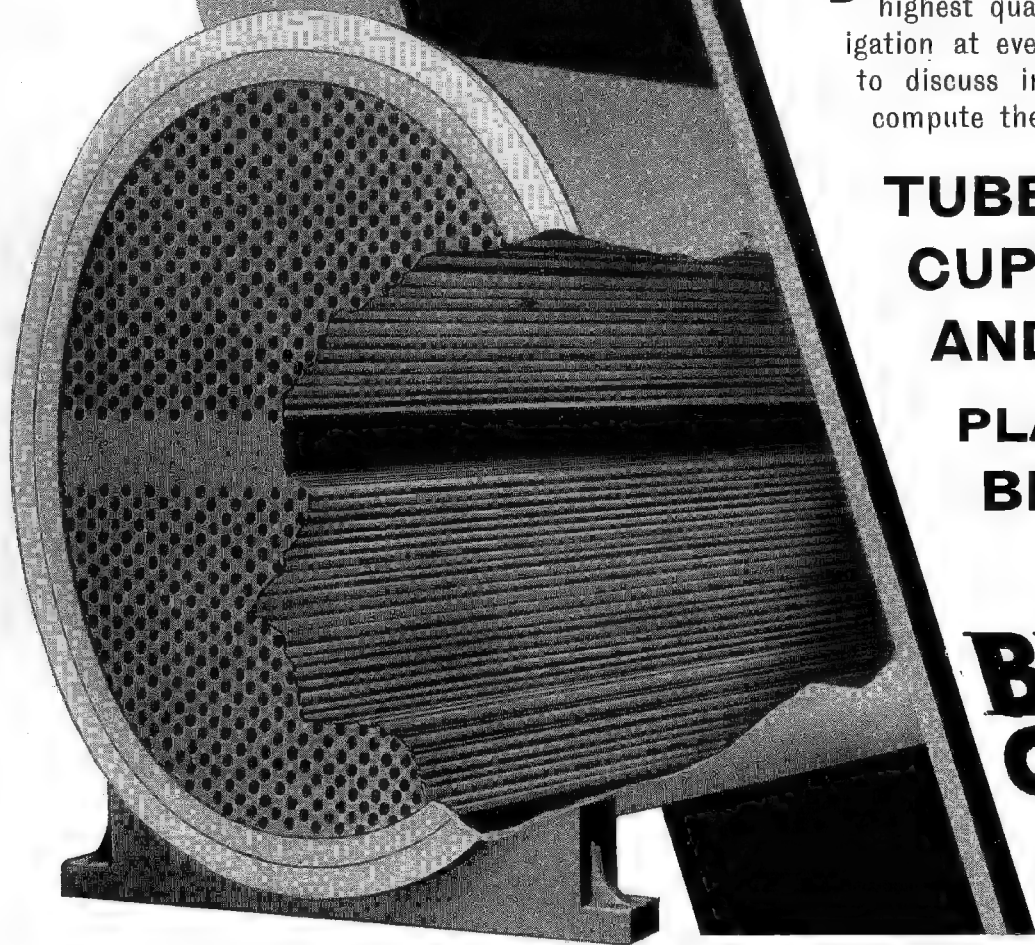
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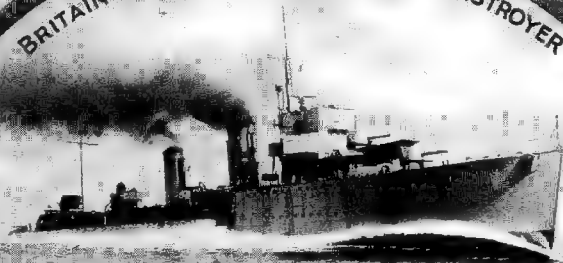
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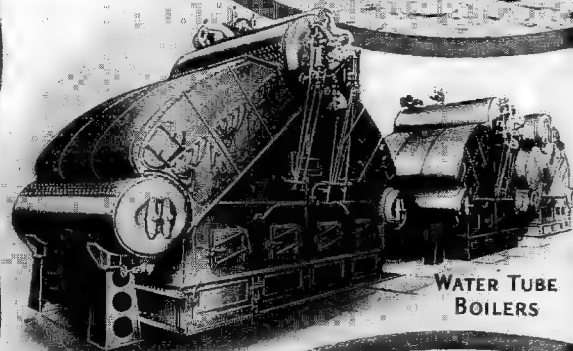


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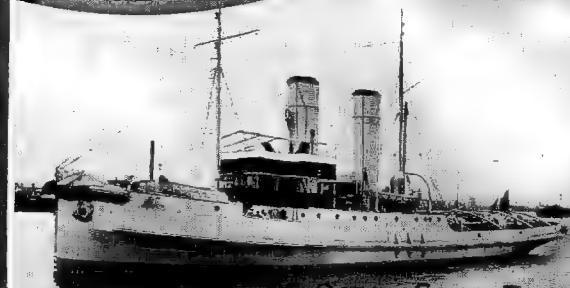
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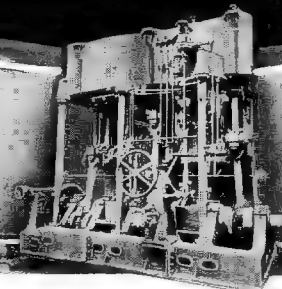


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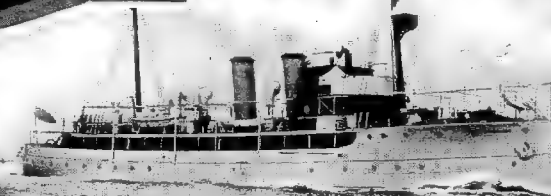


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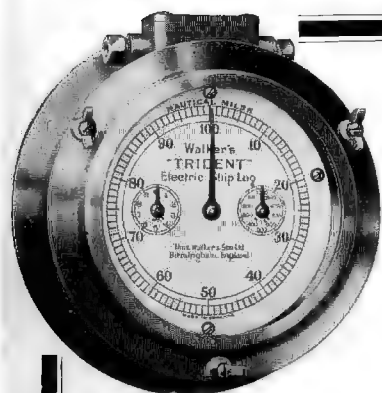


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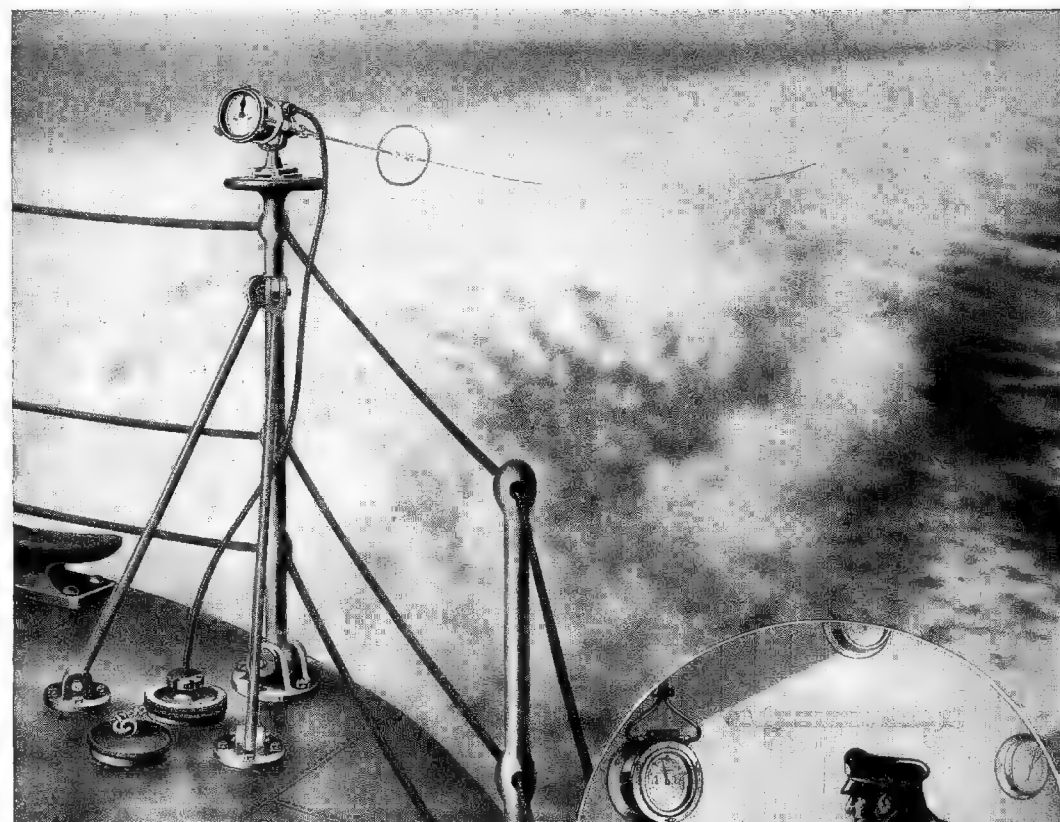
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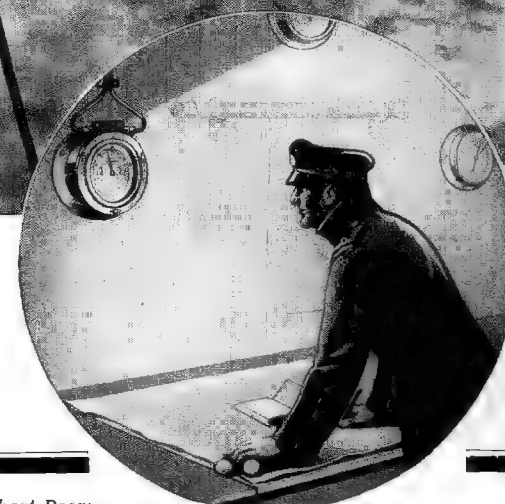
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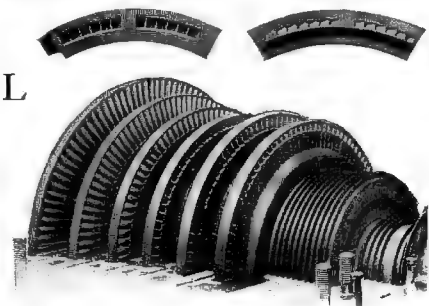
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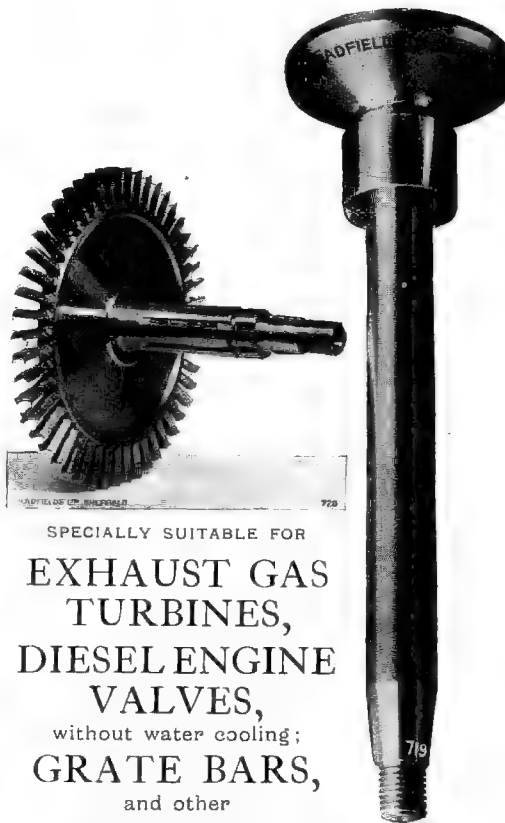
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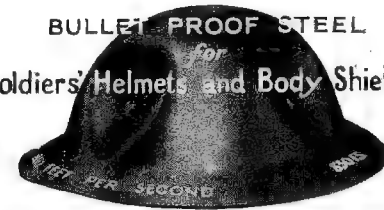
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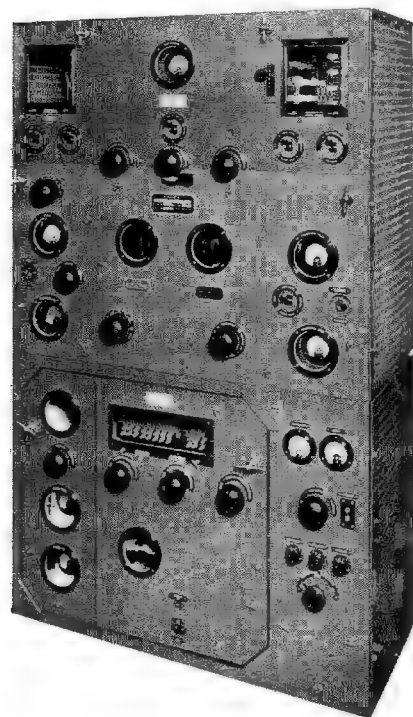


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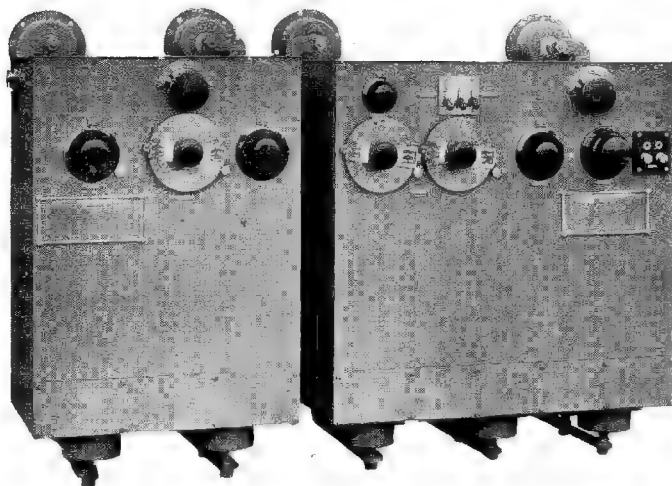
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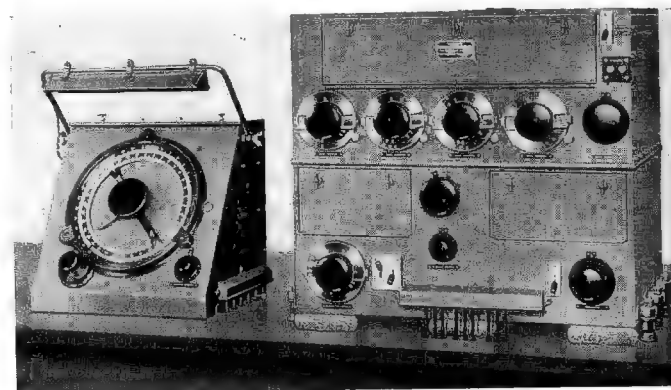
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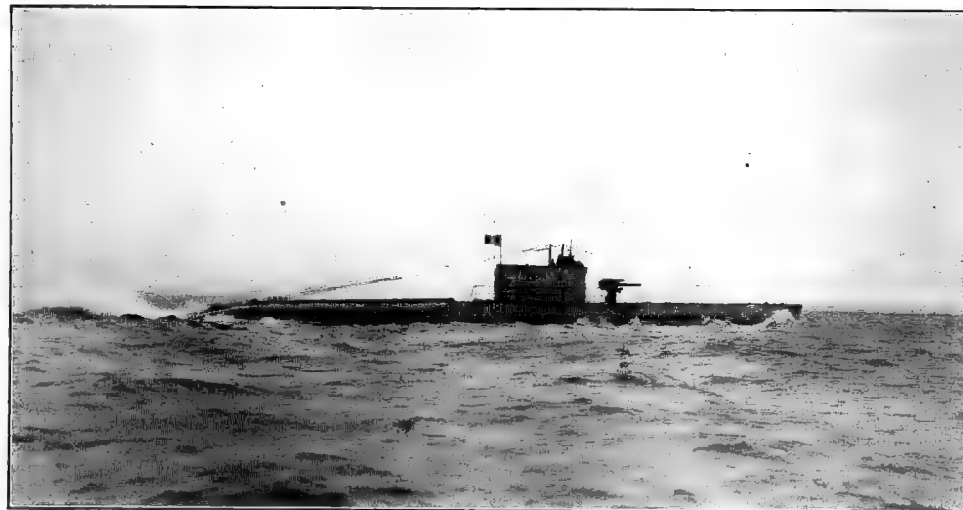
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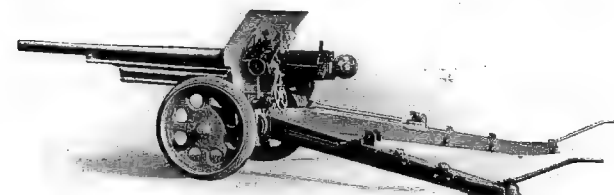
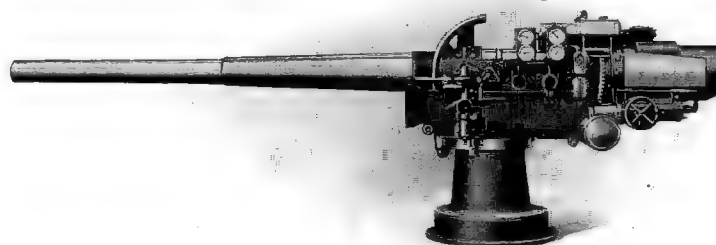
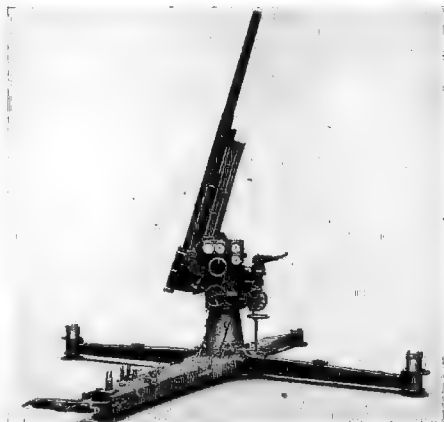
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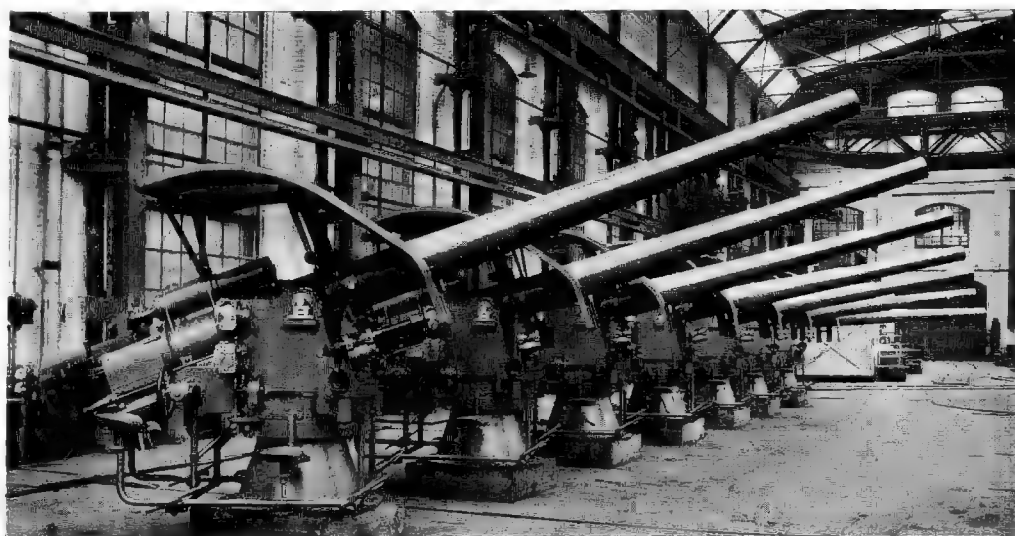
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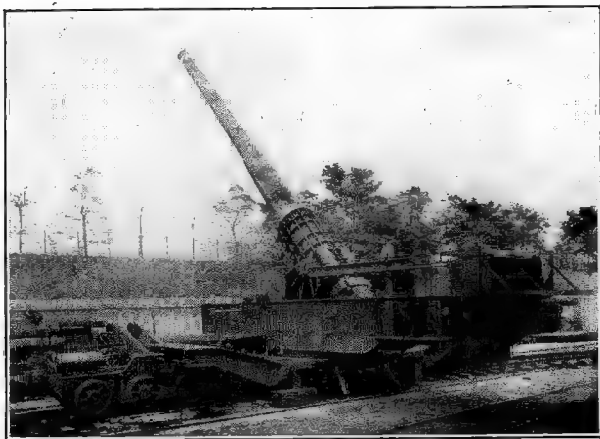
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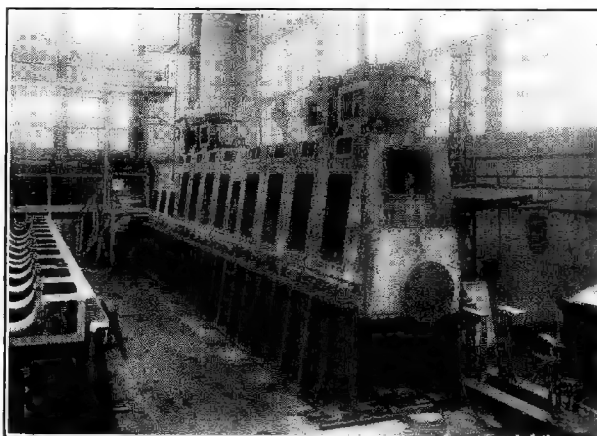
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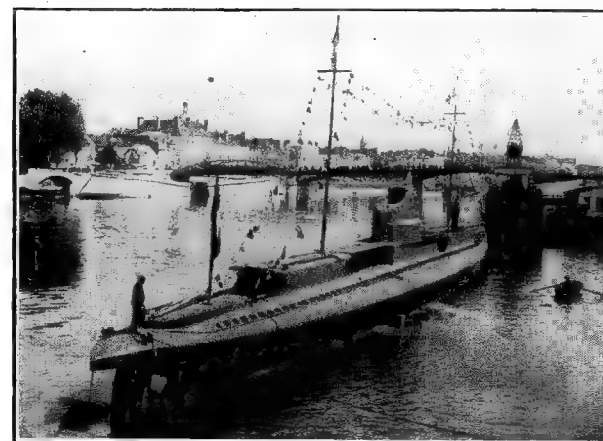
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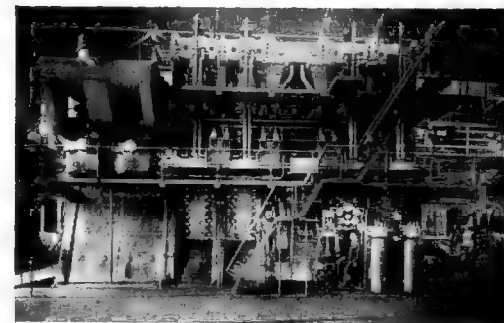
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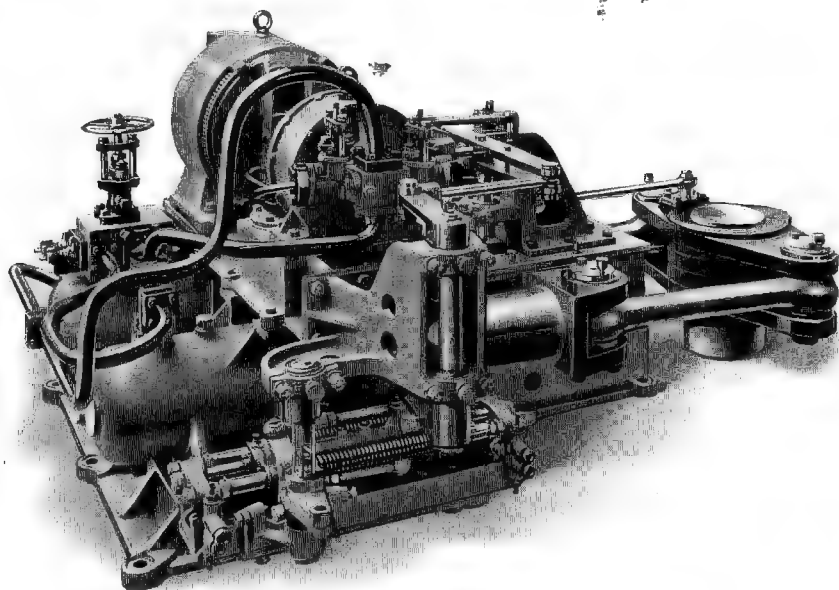
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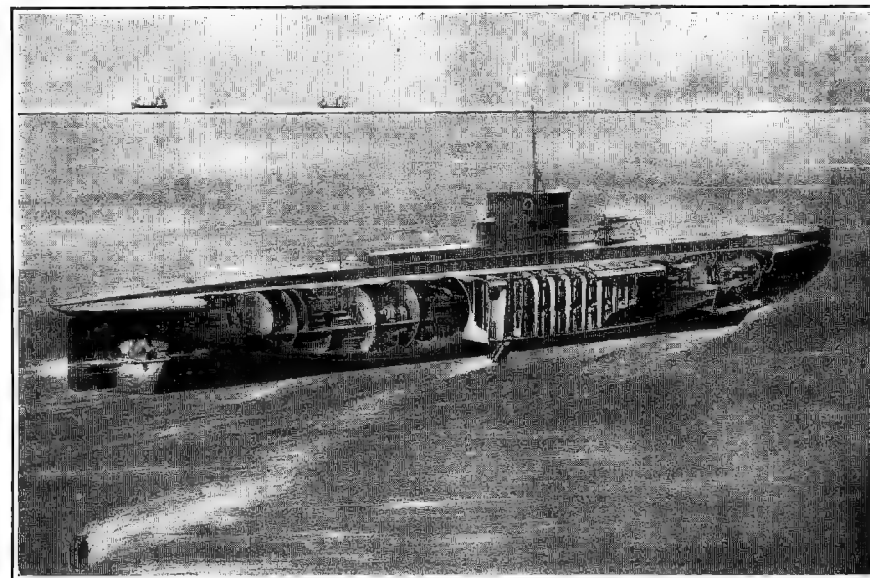
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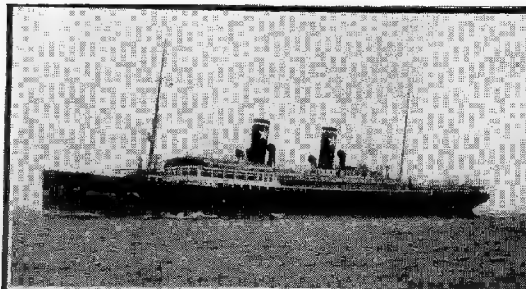
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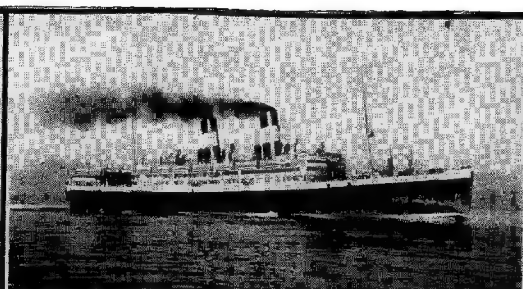


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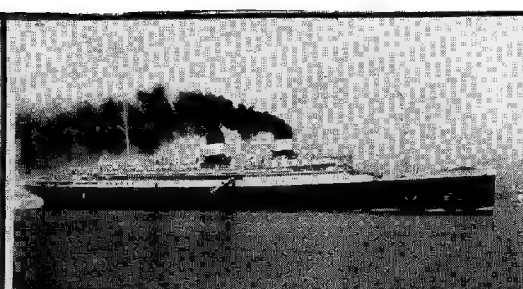
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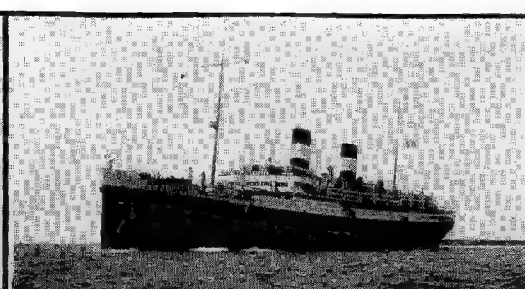
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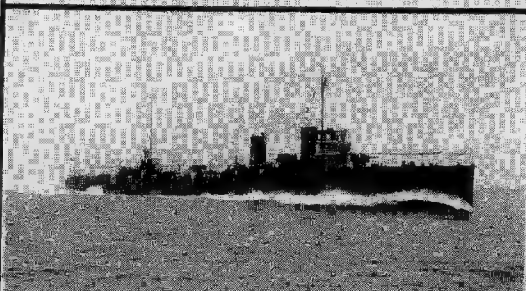
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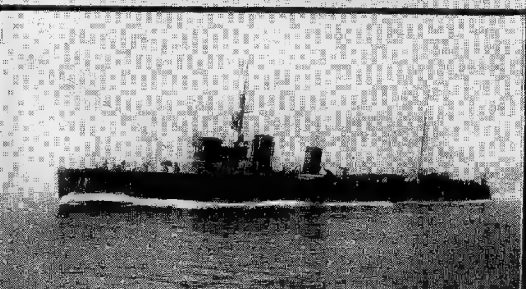
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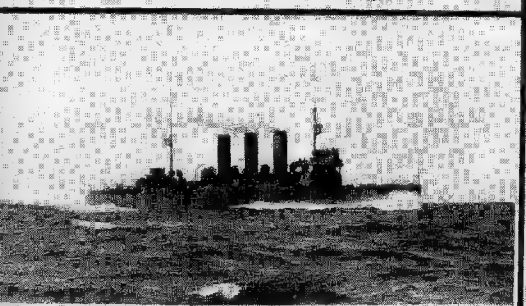
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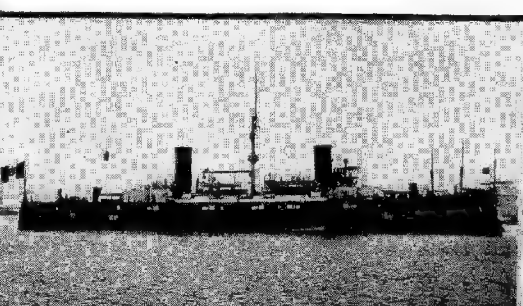
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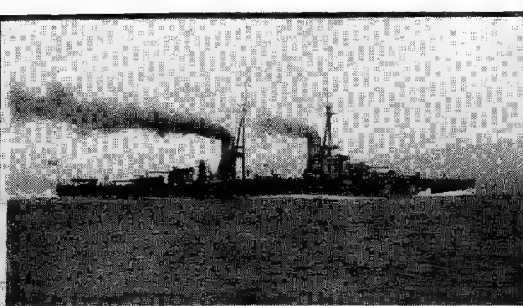
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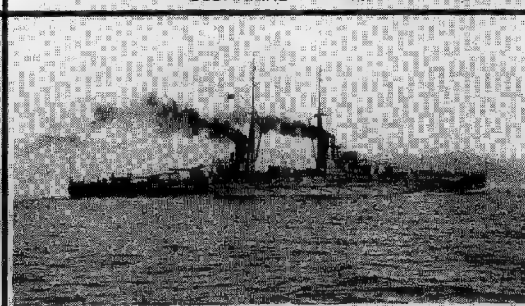
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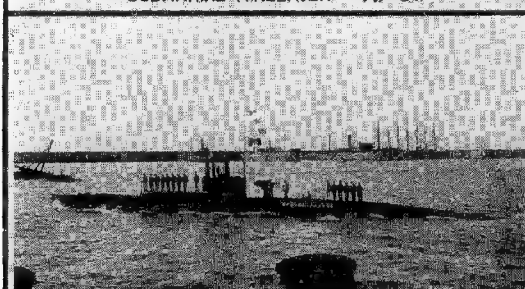
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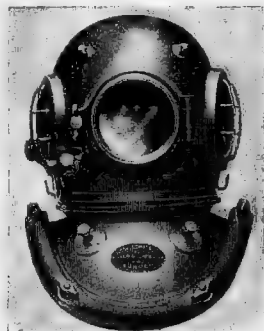
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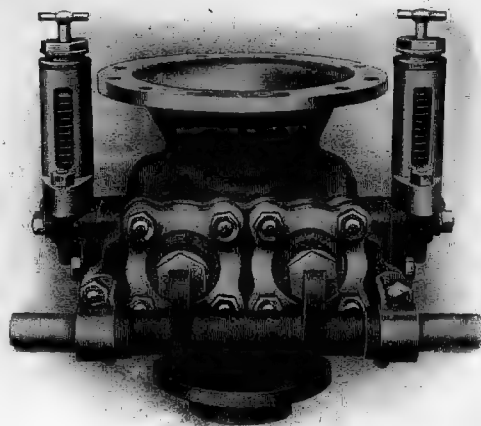
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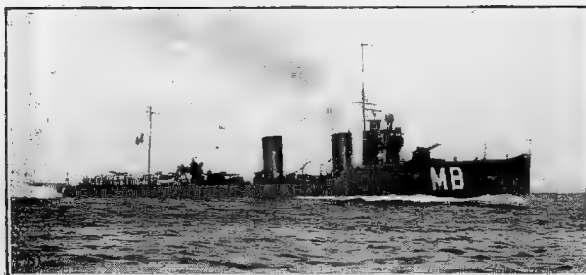
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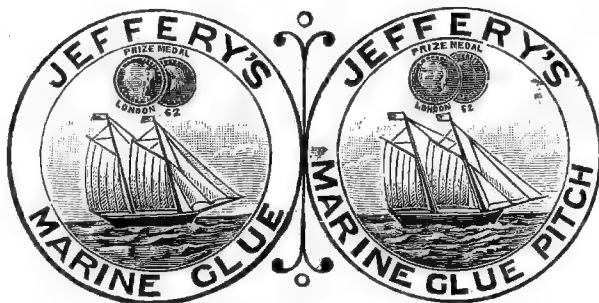
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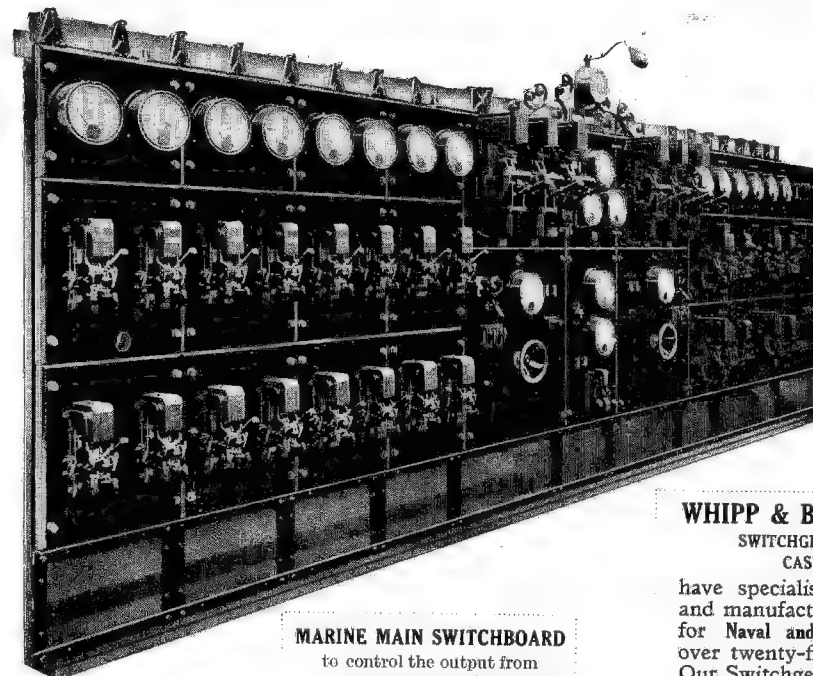
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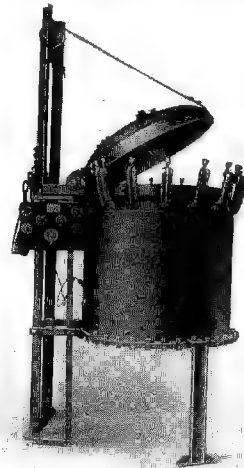
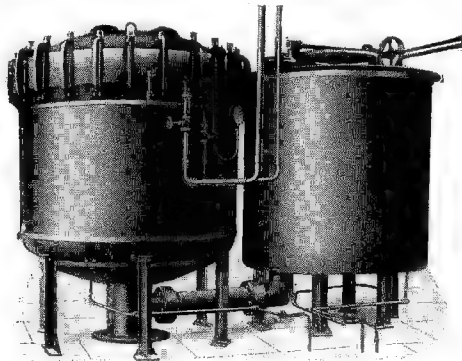
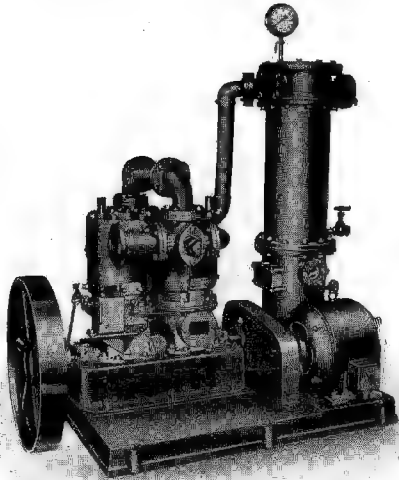
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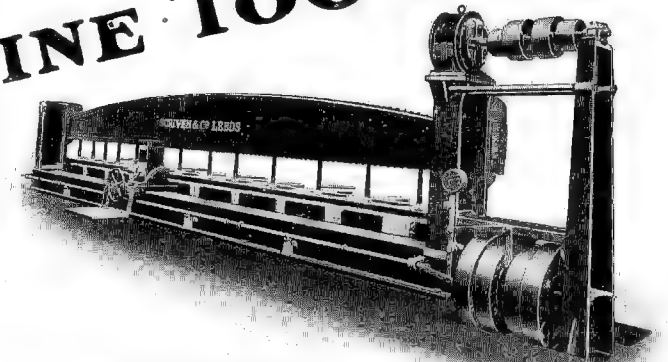


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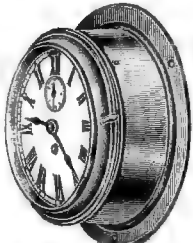
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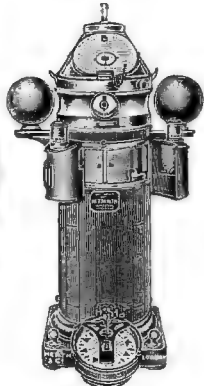
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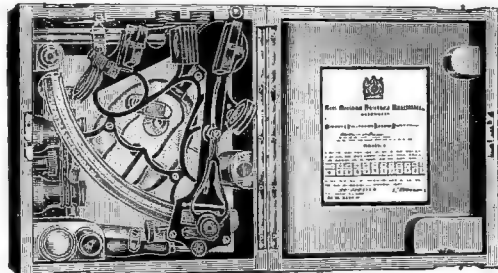
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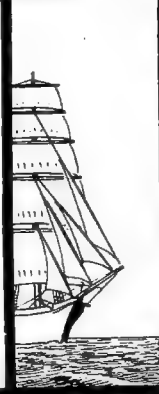
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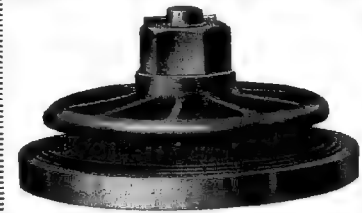


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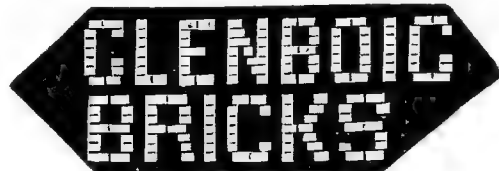
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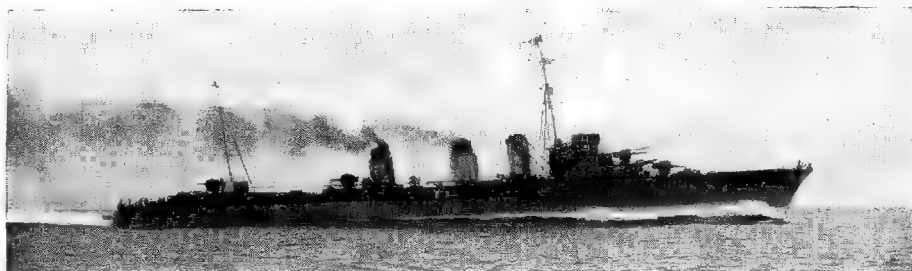
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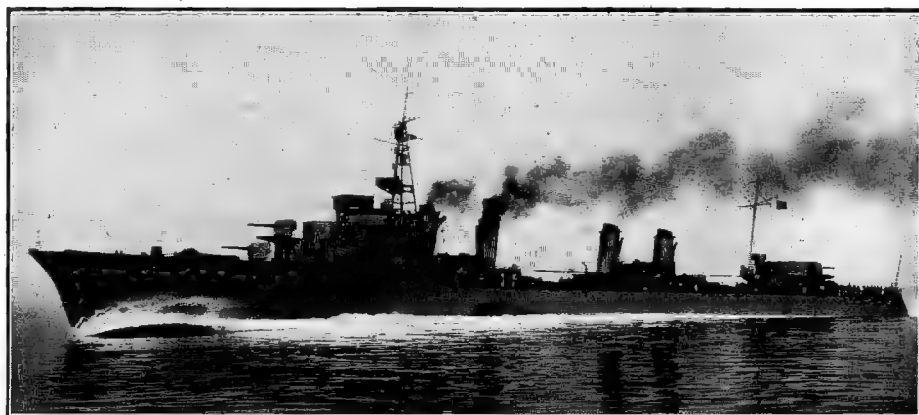
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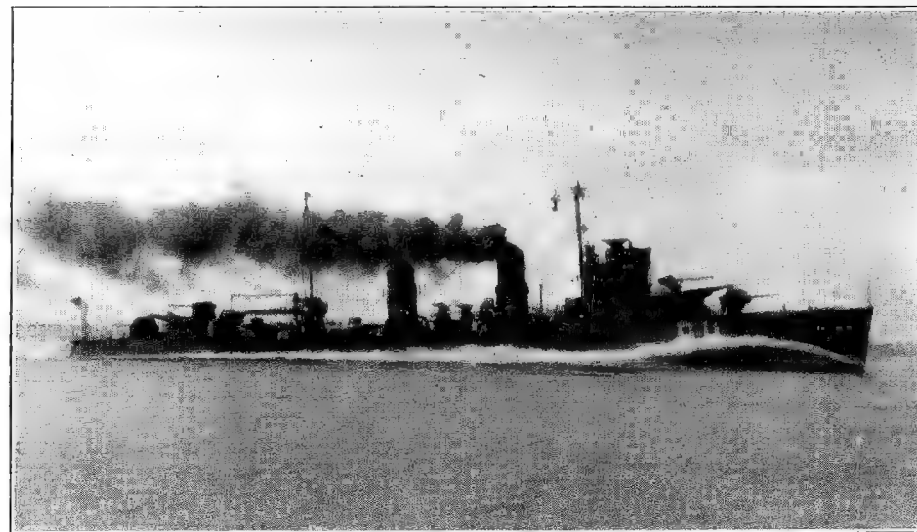
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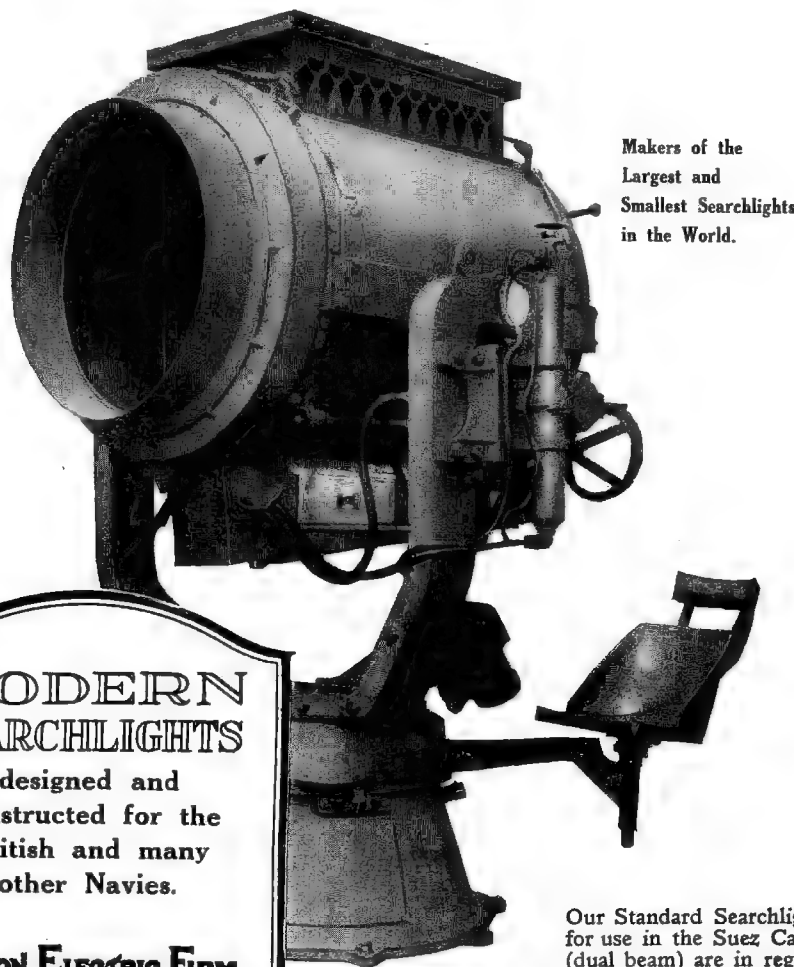
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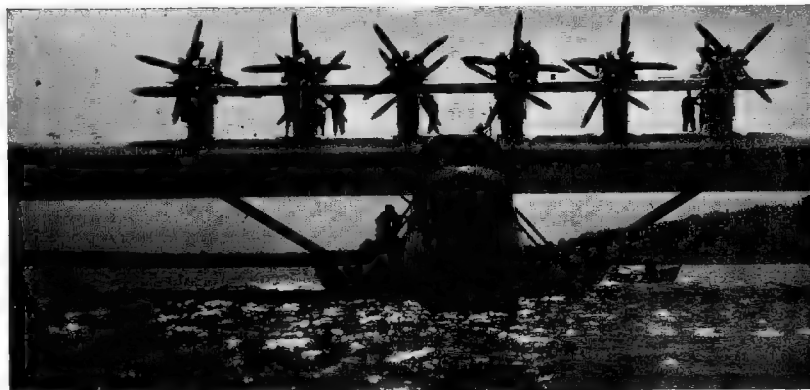
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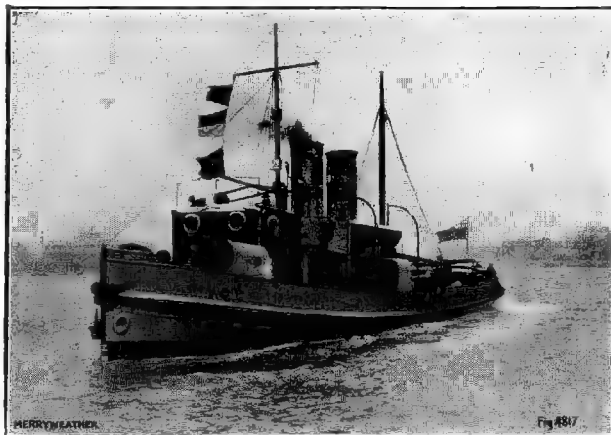
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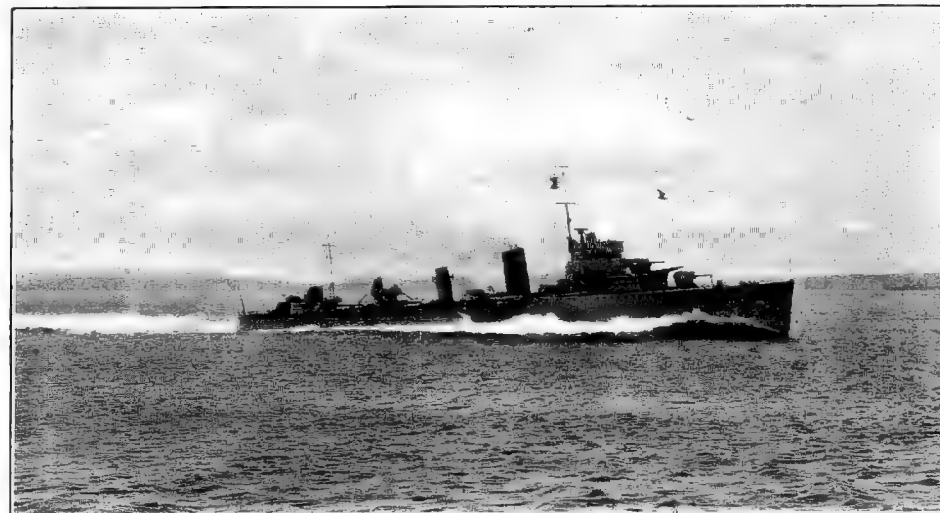
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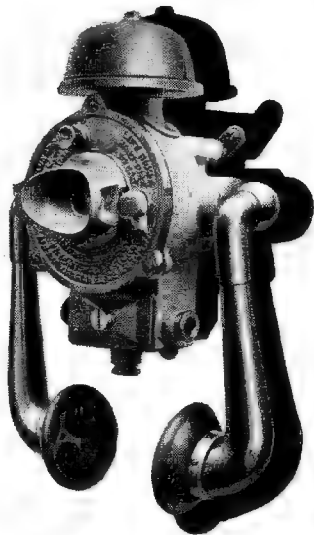
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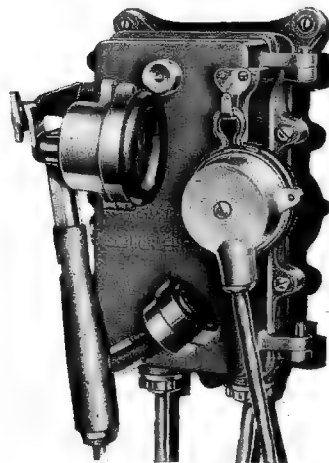
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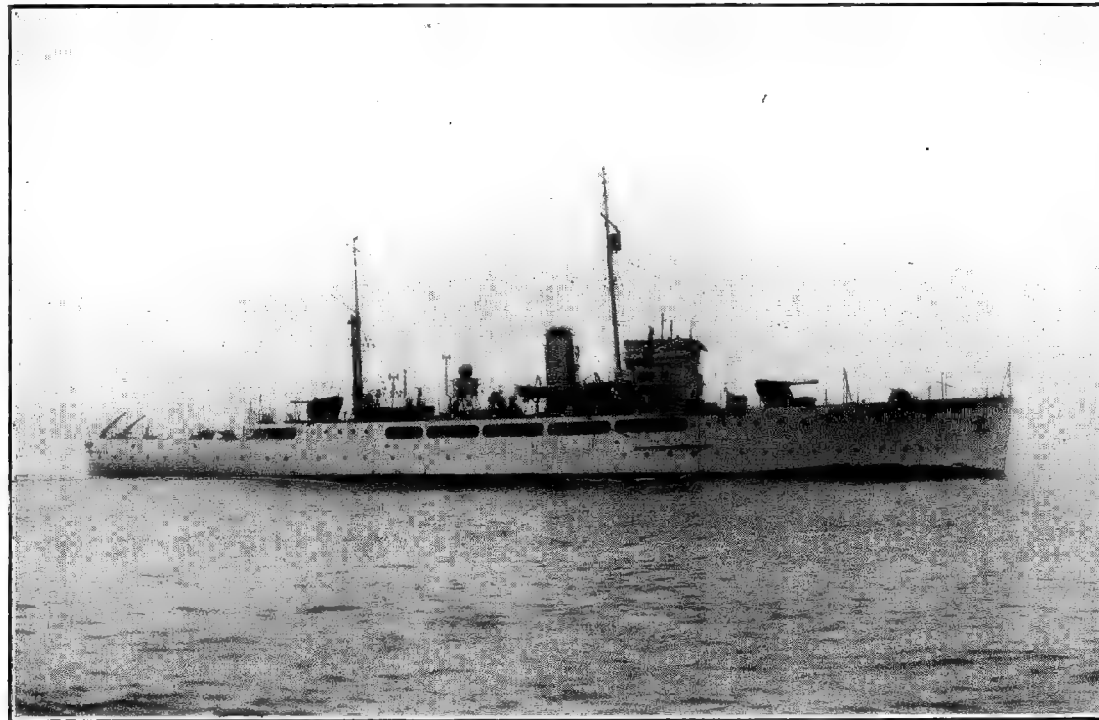
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1929

FOUNDED IN **1897** BY FRED T. JANE.
THIRTY-THIRD YEAR OF ISSUE.



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FOREWORD.

SINCE the appearance of the last issue of "FIGHTING SHIPS" abundant evidence is forthcoming that the conceptions hitherto held of the roles of various types of warships are likely to be altered materially. The limitations imposed by the Washington Treaty resulted in the development of a type of cruiser of very doubtful value for future naval operations. Limits of displacement and gun calibre have combined to produce one of the most remarkable phases in the history of naval rivalry—the 10,000 ton cruiser era. If no restrictions had been placed on cruiser design, it is extremely doubtful whether any of the Powers would have selected such types as the *Kent*, *Pensacola*, *Nachi* and *Tourville*. Left free in the matter each would have preferred to build the types best suited to its national needs in the manifold duties which the cruiser is called upon to perform; but up to now all have been hampered by a form of competitive myopia.

At last there are indications that factors which were not fully developed in the War, but which must inevitably predominate in future sea fighting, are gradually becoming recognised. New types of vessels are under construction which tend to throw the Treaty cruisers into disfavour, and minimize their chances for employment ten years hence. The fetish of speed at the expense of protection is being questioned, while the influence of aerial operations against warships bids fair to modify radically previous conceptions of its value.

How far the approaching Disarmament Conference will affect future construction it is too early to determine. It is probable that the replacement of existing capital ships will be deferred, involving their retention in service for many years to come. The United States Navy Department has already anticipated such an event by rebuilding and modernising its older battleships, and Japan is following a similar policy with her battle cruisers.

It is difficult to imagine that proposals for the abolition of the submarine have any chance of success. So many Powers great and small have devoted their energies to the development of the under water arm that it is unlikely they can be persuaded to a complete change of plans.

First and foremost amongst new designs stands out that of the German ersatz *Preussen*, quite the most remarkable warship produced since the War. Restricted by the Peace Treaty to 10,000 tons displacement and 11 inch gun calibre for her battleships, Germany has reached these limits along altogether unexpected lines. In fixing these restrictions it was doubtless expected that they would be productive of some sort of coast defence ship; instead, we have a hybrid between a battleship and a battle cruiser, the forerunner of a division of ships which must of necessity have a marked influence on future designs. The plan given in this edition has been prepared from the official drawings provided by the German Government, and we take this opportunity of welcoming official co-operation

which has also involved extensive revision of the text.

So far as the British Navy is concerned, photographs of the *York* approaching completion have been specially taken for "FIGHTING SHIPS," and show her to be an exceedingly handsome and efficient looking ship. As yet nothing more has been published concerning the proposed 6 inch gunned cruisers, although it has been unofficially reported that they will be Diesel driven. The new destroyers and submarines follow along orthodox lines, while the sloops of the *Sandwich* class were shown in outline last year, and excepting for slight modifications have been completed as indicated. In the submarine depôt vessel *Medway* the Royal Navy possesses a singularly efficient parent ship which has the added merit of a novel and imposing profile. With the repair ship *Resource* this represents a very important augmentation of a branch of the Fleet whose work is done outside the limelight.

The new French cruiser *Suffren* will be seen to differ in minor details from the previous ships *Tourville* and *Duquesne*, both in appearance and in a sensible exchange of excessive speed for a greater measure of protection. As foreshadowed last year, the aircraft tender *Commandant Teste* has undergone modifications both in armament and catapult equipment. Like the *Albatross* of the Royal Australian Navy, she belongs to the class of aircraft carrier which will be required as a second line to the larger floating aerodromes. In the *Chacal* and later

classes of Flotilla-leader France possesses some of the finest vessels of this kind in existence, and the results of the trials of the *Verdun*, which reached 40.2 knots, should prove an incentive to British builders to eclipse the similar figures put up by the Thornycroft destroyer *Teazer* some years ago. It will be noted in passing that the funnels of the *L'Adroit* class have been reduced in height and that the old cruiser *Edgar Quinet* has lost two of her six funnels.

The Italian section presents many new points of interest, as by the courtesy of the Ministry of Marine "FIGHTING SHIPS" has been provided with plans of the cruisers of the *Zara* and *Banda Nere* types as well as with photos of the new destroyers and auxiliaries. In the *Zara* is found the same trend towards lower speed and better protection, and it will be noticed that the freeboard amidships has been reduced a deck in consequence. Far from being the sort of glorified destroyer that was anticipated, the *Banda Nere* and her sisters will be reduced editions of the *Zara* with 6 inch guns, and resemble destroyers only in so far that they will be able to steam at 37 knots.

For fleet work in the Mediterranean they have great possibilities. It will be seen that in the "Navigatori" class of destroyers the Italians have departed from the general profile which has characterised their productions for the past few years.

Amongst the new photographs, those of the Japanese *Nachi* will be found more than usually interesting. With her sinuous deck

line, enormous keep-like bridgework, curious funnels and serried array of turrets, she presents a truly menacing appearance and is a strange contrast to the British *Kent*. As an example of a novel type of warship, the little net-layer *Shirataka* illustrates the wide and comprehensive views which govern Japan's naval construction, involving the provision of special types of ship for each kind of operation. This was foreshadowed in the small fast minesweepers *Nos. 1 to 4*, and this novel anti-submarine net-layer is another example of the policy of trying out and developing in peace time a few vessels of a type which can be quickly multiplied when needed. In the destroyer *Fubuki* can be seen the features which will ultimately be incorporated into all such vessels—gas-proof gun-houses instead of open shields for the guns, and multiple tubes. Future warfare will demand as much protection for the crews of destroyers as is now provided in cruisers, the present light shields being quite inadequate.

Several fresh photos will be found in the Russian pages; and through the courtesy of the Vice-Minister of the Chinese Navy we have been able to include recent photos of almost the entire Chinese Fleet. An equally full revision of the Estonian Navy section has been afforded through the kindness of the Chief of the Naval Staff of that country.

Recent additions to the navies of the S. American Republics will be found illustrated by photographs or plans.

The U.S. Navy Department has kindly provided photos of the new river gunboats

and other vessels, and the only important blanks in this section relate to the new cruisers of the *Augusta* class.

Once again greetings and warmest thanks are extended to the correspondents of "FIGHTING SHIPS" over seas, and to naval officers who have been good enough to send photos and films, besides the numerous friends at home who have rendered assistance. Some of these are mentioned in a footnote. Especially are we indebted to the various Naval Attachés and the Ministries of Marine they represent. They know full well how much their help and co-operation is welcomed, since it enables us to present both in picture and text much information that would otherwise be lacking.

We would also express our appreciation of the assistance given by Mr. R. Perkins, whose draughtsmanship provides the plans with an individuality as noteworthy as their accuracy, and lastly to the editors, Mr. F. E. McMurtrie, who is responsible for the text and make-up of the book, and Dr. Parkes, who is in charge of the illustrations, for their perennial enthusiasm and devotion to "FIGHTING SHIPS."

THE PUBLISHERS.

Note.—Commandant P. Vincent Bréchignac, French Navy (editor of "Flottes de Combat"); M. Henri Le Masson; Lieut.-Commander Don Mateo Mille, Royal Spanish Navy; and Lieut. Robert Steen Steenson, Royal Danish Navy, have in particular rendered great aid in the revision of certain sections.

ABBORREN—CAHOKIA

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CAHOONE—FALCON.

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St. Genny	100	Sciota (U.S.)	475	Silnica (Jugo-Slav)	387	Stansbury (U.S.)	458	Talbot (U.S.)	458	Thornton (U.S.)	458
St. Issey	100	Scorpion (U.S.)	469	Simone Schiaffino (I)	271	Steadfast	78	Talbot (U.S.)	458	Thracian	78
St. Just	100	Scotol	97	Simoom	78	Stefan Cel Mare (Ro)	373	Talbot (U.S.)	458	Thrush (U.S.)	476
St. Martin	100	Scout	78	Simoun (F)	201	Steggy (Nor)	353	Talbot (U.S.)	458	Thrustor	79
St. Mellons	100	Scythe	78	Simpson (U.S.)	458	Sterett (U.S.)	462	Talbot (U.S.)	458	Thyella (Gr)	239
St. Monance	100	Seabear	78	Simclair (U.S.)	458	Sterling	78	Talbot (U.S.)	458	Tiger	43
St. Omar	100	Seabreeze	100	Siofok (Hungarian)	243	Stevens (U.S.)	458	Talbot (U.S.)	458	Tiger (G)	230
Sakaki (J)	325	Seafire	78	Sirdar	78	Stige (I)	280	Talbot (U.S.)	458	Tiger (U.S.)	483
Sakala (Estonian)	163	Seagull (U.S.)	476	Sir David Hunter	112	Stockton (U.S.)	458	Talbot (U.S.)	458	Tigre (F)	199
		Sealdah	110	Sirene (F)	213	Stoddert (U.S.)	458				
				Sirtul (Ro)	373	Stoke	87				
				Sirius (U.S.)	475						

GENERAL INEX—continued.

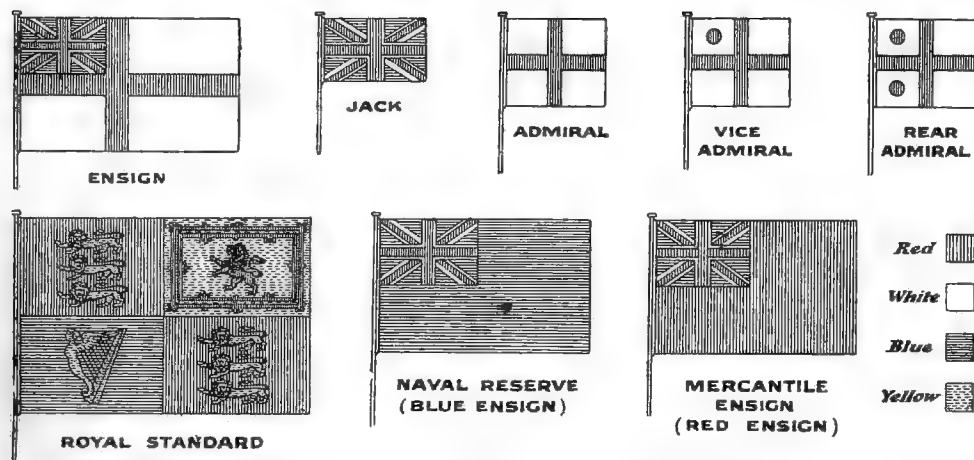
TIGRE—ZNAMVA SOZIALISMA

T—continued.		TSU—VAL		VAL—VIF		VIG—WAR		WAR—WRY		WU F—ZNA	
TIG—TSU	PAGE		PAGE		PAGE		PAGE		PAGE		PAGE
Tigre (I) ..	265	Tsuga (J) ..	325	Valen (Sw) ..	412	Vigilant (U.S.) ..	483	War Sirdar ..	96	Wn Feng (C) ..	143
Tilbury ..	78	Tsurugizaki (J) ..	333	Valentine ..	76	Vigilante (A) ..	123	War Sudra ..	96	Wyoming (U.S.) ..	449
Tillamook (U.S.) ..	475	Tsurumi (J) ..	333	Valhalla ..	76	Vigilante (F) ..	197	Warbler (U.S.) ..	476		
Tillman (U.S.) ..	458	Tsushima (J) ..	319	Valiant ..	34	Vijelia (Ro) ..	370	Ward (U.S.) ..	458		
Tin An (C) ..	146	Tsuta (J) ..	325	Valk (N) ..	350	Villa (Jugo-Slav) ..	387	Ward, Aaron (U.S.) ..	458		
Tingard (U.S.) ..	483	Tucker (U.S.) ..	481	Valkyrie ..	76	Villamil (Sp) ..	400	Warrington (U.S.) ..	462		
Tingey (U.S.) ..	458	Tucuman (A) ..	121	Vallangua (I) ..	282	Villas (Cu) ..	149	Warspite ..	34		
Tintagel ..	78	Tulsa (U.S.) ..	468	Valny (F) ..	199	Ville d'Ys (F) ..	192	Warszawa (Po) ..	361		
Tioga (U.S.) ..	483	Tumlaran (Sw) ..	413	Valorous ..	76	Vimiera ..	76	Warwick ..	75		
Tippecanoe (U.S.) ..	474	Tumleren (Da) ..	156	Valrossen (Sw) ..	413	Vimy ..	76	Wasa (Sw) ..	408		
Titania ..	95	Tung An (C) ..	140	Vambola (Estonian) ..	160	Vimy (F) ..	191	Washington (Mexican) ..	336		
Titano (I) ..	281	Tung Chi (C) ..	147	Vampire ..	76	Vindhunden (Da) ..	156	Wasmuth (U.S.) ..	458		
Tito Speri (I) ..	274	Turbine (I) ..	267	Vancouver ..	111	Vindictive ..	62	Watchman ..	75		
Tiverton ..	87	Turbulent ..	78	Van Doorn (N) ..	350	Violent ..	76	Waterhen ..	75		
Toba (A) ..	123	Turkey (U.S.) ..	476	Vanessa ..	76	Vireo (U.S.) ..	476	Waters (U.S.) ..	458		
Toba (J) ..	320	Turmoil ..	97	Van Galen (N) ..	342	Virsaitis (Latvian) ..	335	Wei Sheng (C) ..	141		
Toia ..	113	Turquoise ..	77	Vanity ..	76	Viscol ..	97	Welles (U.S.) ..	458		
Tokitsukaze (J) ..	323	Turquoise (F) ..	209	Van Meerlant (N) ..	348	Viscount ..	77	Wessex ..	75		
Tokiwa (J) ..	332	Turunmaa (Finnish) ..	165	Van Nes (N) ..	342	Vitry-le-Francois (F) ..	274	Westcott ..	75		
Tolossoet Farinatti (I) ..	277	Tuscan ..	77	Vanoc ..	76	Vittor Pisani (I) ..	191, 491	Westminster ..	75		
Tone (J) ..	318	Tuscarora (U.S.) ..	479	Vanquisher ..	76	Vivacious ..	76	West Virginia (U.S.) ..	441		
Tonkinois (F) ..	203	Tutuila (U.S.) ..	468	Vansittart ..	74	Vivien ..	76	Whipple (U.S.) ..	458		
Tordenskjold (Nor.) ..	352	Twiggs (U.S.) ..	458	Vardar (Jugo-Slav) ..	387	Voima (Finnish) ..	166	Whippoorwill (U.S.) ..	476		
Tornade (F) ..	201	Tydemann (N) ..	350	Vartej (Ro) ..	370	Volodorsky (Rus) ..	379	Whirlpool ..	100		
Torrens ..	105	Typhon (F) ..	201	Vasco da Gama (Por) ..	364	Voltaire (F) ..	179	Whirlwind ..	75		
Torres Garcia (P) ..	366	Tyrant ..	80	Vanban (F) ..	199	Volunteer ..	74	Whitehall ..	74		
Torrid ..	79	Tzar Arsen (Bulgarian) ..	125	Vauquois (F) ..	191	Vorovsky (Rus) ..	382	Whitley ..	75		
Torun (Po) ..	361	Tzar Simeon (Bulgarian) ..	125	Vautour (F) ..	199	Vortigern ..	76	Whitney (U.S.) ..	470		
Toshima (J) ..	332			Vectis ..	76	Vouga (Port) ..	365	Whitshed ..	74		
Touareg (F) ..	203			Vedea (Ro) ..	373	Voyager ..	75	Wiher (Po) ..	360		
Toucey (U.S.) ..	458			Vega ..	76	Vulcan (F) ..	215	Wickes (U.S.) ..	458		
Toul (F) ..	191			Vega (Sw) ..	415	Vulcan ..	95	Widgeon ..	93		
Tourgout Reis (T) ..	419, 421			Vega (U.S.) ..	475	Vulcan II ..	95	Widgeon (U.S.) ..	476		
Tourmaline ..	77			Vegheatorul (Ro) ..	373	Vulcano (Port) ..	368	Wildnes ..	87		
Tourville (F) ..	185			Veinteceno de Maya (A) ..	120	Vulcanus (N) ..	349	Wild Swan ..	74		
Tovarishch (Rus) ..	380			Veinte y Cuatro de Febrero	149	Vzrif (Bulgarian) ..	125	Wilja (Po) ..	361		
Tracy (U.S.) ..	458			(Cu) ..	149			Wilks (Po) ..	361		
Tramontane (F) ..	201			Velasco (Sp) ..	400			Wilkes (U.S.) ..	481		
Travis (U.S.) ..	483			Velos (Gr) ..	239			Wilkebrord Snellius (N) ..	350		
Trefoil ..	97			Velox ..	76			Willemoes (Da) ..	159		
Trento (I) ..	256			Vendetta ..	76			Willet (U.S.) ..	476		
Trenton (U.S.) ..	455			Venefia ..	76			Williams (U.S.) ..	458		
Tretii International (R) ..	381			Venezia (I) ..	262			Williamson (U.S.) ..	458		
Trevel (U.S.) ..	458			Vengeur (F) ..	209			Wilno (Po) ..	361		
Trevolev (R) ..	382			Venomous ..	74			Winchelsea ..	75		
Triad ..	98			Venturous ..	76			Winchester ..	75		
Tribune ..	78			Vera Cruz (Mexican) ..	336			Windsor ..	75		
Tricheco (I) ..	274			Verba ..	90			Winnissimmet (U.S.) ..	483		
Trident (F) ..	206			Verde (I) ..	283			Winona (U.S.) ..	483		
Trieste (I) ..	256			Verdun ..	76			Winslow (U.S.) ..	460		
Trinidad ..	78			Verdun (F) ..	199			Wishart ..	75		
Trinité Schillemans (F) ..	213			Vernon ..	92			Wissahickon (U.S.) ..	483		
Trinity (U.S.) ..	474			Veronica ..	89			Wistaria ..	90		
Trippe (U.S.) ..	482			Vérité ..	74			Witch ..	75		
Triton (Da) ..	157			Versatile ..	76			Witherington ..	74		
Triton (Gr) ..	240			Vesco (F) ..	202			Witte de Wit (N) ..	342		
Triton (N) ..	349			Vesper ..	76			Wivern ..	74		
Tritone (I) ..	282			Vesta (Sw) ..	415			Wolcott (U.S.) ..	483		
Trods (Nor) ..	353			Vestal (U.S.) ..	473			Wolf (G) ..	230		
Trojan ..	78			Veteran ..	74			Wolfhound ..	75		
Troll (Nor) ..	353			Vicente Fidel Lopez (A) ..	123			Wolsey ..	75		
Trombe (F) ..	201			Vicenzo Orsini (I) ..	269			Wolverine ..	74		
Trotus (Ro) ..	373			Viceroy ..	77			Wood (U.S.) ..	458		
Troupier (F) ..	216			Victoria and Albert ..	96			Wood, Welborn C. (U.S.) ..	453		
Truant ..	78			Victor Réveille (F) ..	214			Woodbury (U.S.) ..	483		
Trud (Rus) ..	385			Vidar (N) ..	349			Woodcock (U.S.) ..	476		
Trusty ..	78			Vidar (Sw) ..	411			Woolston ..	75		
Truxton (U.S.) ..	458			Videla (Chil) ..	136			Worcester ..	74		
Trygg (Nor) ..	353			Vides Kichkar (Siamese) ..	391			Worden (U.S.) ..	453		
T. S. McEwen ..	112			Vidette ..	76			Wrangel (Sw) ..	411		
Tsubaki (J) ..	325			Viesti (I) ..	264			Wren ..	74		
Tsubame (J) ..	331			Viesturs (Latvian) ..	335			Wrestler ..	75		
				Vifor (Ro) ..	370			Wright (U.S.) ..	472		
								Wryneck ..	75		

BRITISH—Flags, Uniforms.

BRITISH ROYAL NAVY.

NOTE:—The following pages, descriptive of H.M. Navy, have been inspected and approved for publication by the Admiralty. The Admiralty accepts no responsibility whatever for the accuracy of any of the statements made in "Fighting Ships" as regards H.M. Navy.



Note.—M (International Code) at masthead indicates that Submarines are in company and/or exercising. When accompanied by group from Numerical Table (Int. Code), number of Submarines are indicated by group hoist. R.F.A. fly Blue Ensign with Admiralty Badge (Foul Anchor). Mercantile F.A. fly Red Ensign.

Colour of Ships.

Warships in Home Waters, dark grey; in Mediterranean, light grey. Cruisers and Sloops on China Station, white hulls, grey upperworks. Sloops in East Indies and Red Sea, and Cruisers in East Indies, North America and West Indies, white with primrose-yellow masts, funnels and yards. Sloops for North America and West Indies, New Zealand and Africa Stations, grey all over. Fishery Protection Vessels, Depot Ships and many auxiliaries in Home Waters, black hulls and light grey upperworks; funnels may be varied between black, white and grey, and may have rings for identification purposes. Surveying Ships have white hulls with yellow funnels. All Destroyers have their Pendant Numbers on bows and across sterns. Submarines have their Class Letter and Numbers painted on sides of Conning Tower.

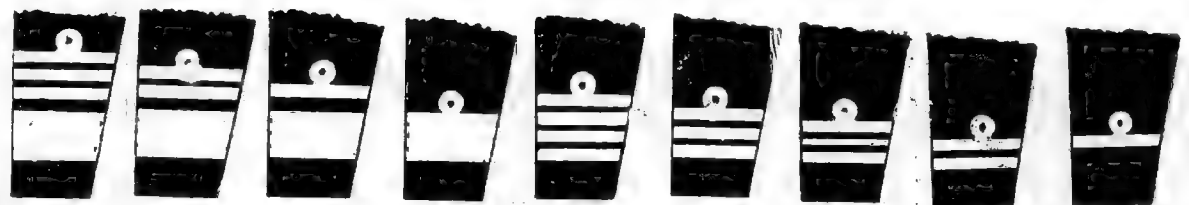
Future Construction.

The following is the programme of new construction that was proposed during 1929-1930, with notes of modifications made in it.

1928-29. 2—10,000-ton Cruisers (construction in abeyance), 1 Flotilla Leader, 8 Destroyers, 6—R type Submarines (2 of which have been cancelled), 4 Sloops, 1 Gunboat, 1 Submarine Depot Ship (ordered but subsequently cancelled).

1929-30. 1—10,000-ton Cruiser, 2 smaller Cruisers, 1 Flotilla Leader, 8 Destroyers, 5—R type Submarines, 1 Fleet Submarine, 6 Sloops, 1 Net Layer.

Uniforms.



Admiral Vice-Admiral Rear-Admiral Commodore * Captain Commander Lieutenant Lieutenant Sub-Lieutenant
(1st Class) (2nd Class)

Admiral of the Fleet has one stripe more than Admiral, i.e., four in all.
Relative Ranks. Non-Executive Branches (as modified, 1926).
Engineer Officers have same as above, with purple between stripes.
Medical " " " " scarlet " "
Dental " " " " orange " "
Accountant " " " " white " "
Instructor " " " " light blue " "
Shipwright " " " " silver grey " "
Wardmaster " " " " maroon " "
Electrical " " " " dark green " "
Ordnance " " " " dark blue " "

* Ring separated from top stripe.

Navy Estimates and Personnel, 1929-30.

£55,865,000 net. (1928-29, £57,300,000 net.)
Personnel: 99,800.

Board of Admiralty.

First Lord: The Rt. Hon. A. V. Alexander, M.P.

First Sea Lord and Chief of Naval Staff: Admiral of the Fleet Sir Charles E. Madden, Bt., G.C.B., G.C.V.O., K.C.M.G., LL.D., D.C.L.

Second Sea Lord: Admiral Sir Michael H. Hodges, K.C.B., C.M.G., M.V.O.

Deputy Chief of the Naval Staff: Vice-Admiral Sir William W. Fisher, K.C.B., C.V.O.

Third Sea Lord and Controller: Vice-Admiral Roger R. C. Backhouse, C.B., C.M.G.

Fourth Sea Lord: Vice-Admiral Vernon H. S. Haggard, C.B., C.M.G.

Civil Lord: G. H. Hall, Esq., M.P.

Parliamentary and Financial Secretary: C. G. Ammon, Esq., M.P.

Permanent Secretary: Sir Oswyn A. R. Murray, K.C.B.

Naval Secretary to First Lord: Rear-Admiral G. K. Chetwode, C.B., C.B.E.

Asst. Chief of Naval Staff: Rear-Admiral Wilfred Tomkinson, C.B., M.V.O.

Committee of Imperial Defence.

President: The Lord President of the Council.

Members: H. M. Secretaries of State for War, Air, Colonies, India; The First Lord of Admiralty; The First Sea Lord and Chief of Naval Staff; Chief of the Imperial General Staff; Chief of the Air Staff.

Also representatives of H.M. Treasury and other Government Departments are called in, as requisite.

Director of Naval Construction.

Sir William J. Berry, K.C.B.

Mercantile Marine.

(From "Lloyd's Register," July, 1929).

Total for whole of British Empire, 23,116,147 tons gross.

BRITISH NAVAL ORDNANCE.

Naval Ordnance—BRITISH

NOTE.—All details unofficial, but believed to be approximately correct. (Particulars formerly given of some older marks of guns, no longer mounted in H.M. Ships, have been deleted).

Calibre. ins.	Mark.	Length of Bore in Calibres.	Weight of piece without B.M.	Weight of Projectile.	M.V.	M.E.	Weight of Full Charge.	REMARKS.
			tons cwt. qrs.	lbs.	f. s.	f. t.	lbs.	
HEAVY B.L.								
16	I	45	103 10 0	2461	2953	..	640	"Nelson" and "Rodney."
15	I	42	97 3 0	1920	2450	84,070	428	Mounted in "Royal Sovereign," "Queen Elizabeth," "Hood," "Repulse," and "Erebus" classes.
13.5	VI	45	75 8 0	{ 1250 L. 1400 H. }	2700	63,190	{ 293 L. 297 H. }	Mounted in "Tiger." "Iron Duke" class.
	V	45	74 18 1	..	2500	63,190	..	
MEDIUM B.L.								
8	I	55	16 10 0	256	3150	17,615	..	"Kent," "London," "Dorsetshire" and "York" classes.
7.5	VI	45	13 11 0	200	2800	12,500	61	"Frobisher" and "Effingham." "Hawkins" and "Vindictive."
	V	50	15 16 2	200	2800	12,500	61	
6	XVIII	50	8 9 2	100	2800	..	28 $\frac{5}{8}$	Cruisers and Secondary Armament Battleships and Battle Cruisers.
	XVI	50	7 19 1	100	3100	6665	33	
	XII	45	6 14 2	100	2750	..	27 $\frac{1}{2}$	
	XI*	50	8 8 2	100	2937	5990	32 $\frac{1}{2}$	
	XI	50	8 8 2	100	2937	5990	32 $\frac{1}{2}$	
	VII	44.9	7 7 2	100	2493	5250	28 $\frac{5}{8}$	Secondary Armament "Iron Duke" class and "Tiger."
5.5	I	50	6 1 0	82	2725	4222	22 $\frac{1}{2}$	Breech mechanism of the Holmstrom type. Aircraft Carriers and Secondary Armament "Hood."
4.7	II	40	3 1 0	48.5	2560	2205	..	AA. mounted in "Nelson" and "Rodney." Mounted in later Flotilla Leaders and Destroyers.
	I	45	3 1 0	50	3000	2800	11 $\frac{3}{8}$	
LIGHT B.L.								
4	XI	40	1 4 3	31	2100	..	..	Secondary armament, Battle Cruisers and Monitors.
	IX*	44.35	2 1 1	31	2625	1934	7 $\frac{1}{16}$	
	IX	44.35	2 1 1	31	2625	1934	7 $\frac{1}{16}$	
	VIII	39.8	1 4 2	31	2287	..	5 $\frac{3}{8}$	Earlier Destroyers.
MEDIUM Q.F.								
6	III	40	7 0 0	100	2025	..	13 $\frac{1}{4}$	In reserve for D.A.M.S.
4.7	VII	50	3 5 0	45	..	..	8 $\frac{1}{16}$	In reserve for D.A.M.S.
	V*	43.9	2 10 0	45	..	..	8 $\frac{1}{16}$	
	V	43.9	2 10 0	45	..	..	8 $\frac{1}{16}$	

BRITISH—Naval Ordnance.

BRITISH NAVAL ORDNANCE.

LIGHT GUNS.—(See Note on previous page).

Calibre. ins.	Mark.	Length of Bore in Calibres.	Weight of piece without B.M.	Weight of Projectile.	M.V.	M.E.	Weight of Full Charge.	REMARKS.
			tons cwt. qrs.	lbs.	f. s.	f. t.	lbs.	
LIGHT Q.F.								
4	XII	40	1 6 0	31	2100	..	5½	Semi-automatic. Fixed Ammunition. A.A. mounting. Battleships, Battle Cruisers, Cruisers and Aircraft Carriers.
	VII	40.5	1 4 4	31	2750	1970	5½ ⁷ / ₁₆	Do. do. do.
	V*	45	2 1 2	31	2625	1934	5½	Do. do. do.
	V	45	2 1 2	31	2625	1934	7½ ¹ / ₁₆	Semi-automatic. Earlier Destroyers and Submarines.
	IV	40	1 3 3	31	2225	1137	5½	Do.
	III	40	1 3 0	25	2456	1200	3¾ ⁹ / ₁₆	D.A.M.S.
3	I	45	1 0 0	{ 16 12½ }	2500	..	{ 2½ ¹ / ₈ 2½ ¹ / ₂ }	Semi-Automatic. Fixed ammunition. A.A. mounting. Earlier Cruisers, Flotilla Leaders and Destroyers.
3	I	23	5 3	12½	1700	..	1½ ⁵ / ₁₆	Fixed ammunition. In reserve for D.A.M.S.
3	I	40	11 2	12½	2197	..	2	Minesweepers, Sloops and Gunboats.
2.24	II	40	7 0	6	1735	..	8¾ ³ / ₄ ozs.	Fixed ammunition. Auxiliary patrol.
1.85	II	40	5 0	3½ ⁵ / ₁₆	1873	..	7½ ¹ / ₄	Fixed ammunition. Hotchkiss. Saluting guns in all classes.
	I	50	6 0	3½ ⁵ / ₁₆	2575	152	13½ ¹ / ₈	Fixed ammunition. Vickers. Auxiliary Patrol. Aircraft Carriers.
	II	39.37	1 3	2	2000	55.5	3	Automatic. A.A. mounting. Cruisers, Flotilla Leaders and Destroyers.
	I	39.37	1 3	2	2000	55.5	3	
ANTI-SUBMARINE HOWITZERS, B.L.								
11	I	8.5	1 14 2	200	..	..	lbs.	In reserve for D.A.M.S. and Auxiliary Patrol.
7.5	I	8.5	6 0	100	390	105.5	1½	
STICK BOMBS.								
Gun.		Weight of Bomb.		Charge.				
4.7 in. Q.F.		{ 600 500 250 200 }		3 lbs. 14 ozs.				
4 in. B.L. or Q.F.		{ 350 200 }		2 lbs. 2 ozs. 3 lbs. 4 ozs.		Mark IV. & VIII. Mark V & IX.		
12 pdr. 12 cwt. Q.F.		200		1 lb.				

Torpedoes.

No official details obtainable. Standard torpedo used is the 21 inch Mk 5 heater type, 18 inch tubes being obsolete and only fitted for instructional purposes in certain destroyers and submarines. Specially strengthened 14 inch torpedoes are used for dropping from seaplanes. In all new cruisers tubes are of the above-water pattern; the great height of these above the waterline has necessitated modifications of construction and depth-keeping mechanism to avoid breaking up the torpedo, and deep diving when fired. Torpedoes are fired by air or a cordite charge, and are of the improved heater type fitted with high and low speed settings with a corresponding short or long range, and are directed by an angled gyro to give increased firing arc.

Searchlights.

These are of 36 inch and 24 inch diameters. The number of 36 inch pattern has been reduced to six in capital ships with 2—24 inch for signalling. Cruisers carry 4—36 inch lights, while 1—24 inch is mounted in destroyers. The searchlights are elevated and trained from remote positions, and are controlled by an electrical 'follow-the-pointer' device. In the Mk 5—36 inch are lamp the carbons revolve and the size of the arc is regulated by an electro-magnetic arc beater, which gives a nearly parallel beam reflected from the mirror. As the carbons no longer burn in a spirit flame the beams have lost their characteristic blueish tint. Carbons are fed automatically with alternative hand operation, while an improved pattern of arc striker minimizes the risk of 'broken carbon.'

Mining.

Mk H2 mine, extensively used in the War, is still the standard type used from surface minelayers, with a modification for use by submarines. Weight 650 lbs., diameter 38 inches, buoyancy 400 lbs., fitted with 6 "horns" for exploding charge. Several marks of sinker are used in conjunction with this mine according to the depth, tides, etc. No details are obtainable of further types of mine, e.g., observation.

Protective paravanes are carried by all deep draught ships, of a similar design to that used during the War.

BRITISH WARSHIP BUILDERS.

Note.—The headings give the abbreviated titles by which builders are mentioned on later Ship Pages. With a few exceptions, all details given below were kindly approved or furnished by the firms mentioned.

Vickers—Armstrongs. (A)

(See also Vickers—Armstrongs. (B) on following page).

SIR W. G. ARMSTRONG, WHITWORTH & CO., LTD. (NEWCASTLE-ON-TYNE). *Armstrong Yard*, opened 1913, and now engaged on the construction of both warships and mercantile vessels. Area 81 acres. Frontage about a mile. Ten slips, 1000 to 500 ft. long. *Walker Shipyard*. Area 30 acres. Frontage 317 yards. Six slips from 650 to 450 ft. long. (The former Elswick yard ceased to function as such in 1918, the land and shops being absorbed by the Ordnance and Steel Departments of the firm.) The Dobson and Tyne Iron Shipbuilding Yards are now included in the organisation.

Beardmore.

WM. BEARDMORE & CO., LTD. (NAVAL CONSTRUCTION WORKS, DALMUIR, NR. GLASGOW). All classes of ships, naval and mercantile, up to largest size and highest speed. Engines of all types and sizes. Six big slips, four smaller and four 500 feet being laid out 1920. This yard is designed for vessels up to 900 ft. long. 220-ton crane. Fitting basin of 8 acres, 28 ft. at low water.

Cammell Laird.

CAMMELL LAIRD & CO., LTD. (BIRKENHEAD AND TRANMERE). Area of yard, 108 acres. Six slips (longest 1000 ft.), six small slips. Seven graving docks, five small and No. 6, 708 × 80 ft.; No. 7, 861 × 90 ft. Outer basin, 14½ acres; inner basin, 2½ acres. Annual capacity, 100,000 tons gross and 400,000 H.P. output. Establishment consists of North Yard, where vessels up to 500 feet in length can be constructed, and the South Yard, in which are slips suitable for vessels between 600 and 900 feet in length. Builders of heavy armoured ships, cruisers, flotilla leaders, destroyers, submarines, &c., as well as of merchant vessels of all classes. Equipment of yard thoroughly up-to-date.

Clydebank.

JOHN BROWN & CO., LTD. (SHIPBUILDING & ENGINEERING WORKS, CLYDEBANK, GLASGOW). Area, 80 acres. River frontage, 1050 yards. Building berths: Five of 950 to 600 ft. in length, and three 600 to 450 ft. in length. Building berths are commanded by derricks, tower and gantry cranes; two of berths are covered. Tidal basin: 5½ acres in area, 30 ft. depth, L.W.O.S.T. with two entrances of 130 and 180 ft. width respectively. Basin commanded by two 150-ton cranes; also four wharf cranes of 5 to 30 tons capacity. Builders of war and mercantile vessels of all types and the largest dimensions, inclusive of machinery and equipment. Steam engines of reciprocating type, Parsons and Brown-Curtis turbine types; and Diesel oil engines.

Denny.

WM. DENNY & BROS., LTD. (LEVEN SHIPYARD, DUMBARTON). Area: 60 acres. Building berths up to 550 ft. in length. Two wet basins, one 475 ft., one 910 ft. Numerous cranes with lifts up to 110 tons. Destroyers, torpedo boats, submarines and mercantile vessels built, with necessary machinery, &c.

Doxford.

WM. DOXFORD & SONS, LTD. (PALLION YARD, SUNDERLAND). Builders of vessels up to 20,000 tons dead-weight. Output over 100,000 tons *gross* per annum. Build Diesel marine engines of opposed piston, airless injection type, up to any size.

Fairfield.

THE FAIRFIELD SHIPBUILDING & ENGINEERING CO., LTD. (GOVAN, GLASGOW). Area: 70 acres. Water front: 2600 ft. 11 slips to build ships up to 900 ft. in length. Dock: 6 acres with 270 ft. entrance. 250-ton crane. Wet basin: 900 ft. long and ten docks up to 900 ft. Naval and mercantile ships, engines, boilers, &c., of all types. Associated with Northumberland S.B. Co. and Workman, Clark & Co.

Harland & Wolff.

HARLAND & WOLFF, LTD. (BELFAST). Eight large slips in main yard (two 860 × 99 ft.). Six large slips in East Yard. Two large docks and three smaller in the vicinity of the works. Also at Govan, Glasgow, 7 large slips; Greenock, 6 large slips. Engineering establishments: Diesel Engine Works, Finnieston and Scotstoun, Glasgow; Clyde Foundry, Govan, Glasgow. Exceptional facilities at London, Liverpool, and Southampton, for the repair of ships and machinery.

Hawthorn Leslie.

R. & W. HAWTHORN, LESLIE & CO., LTD. (HEBBURN YARD, HEBBURN-ON-TYNE). Twelve slips up to 700 ft. long. One dock: 460 × 68 × 21 ft. on blocks; 26 ft. draught at quay at low water. Engine department of 150,000 I.H.P. per annum. Designers and builders of cruisers, destroyers and other warship types. Engine every type of war vessel. Builders of locomotives for main line service and works.

Palmers.

PALMERS SHIPBUILDING & IRON CO., LTD. (JARROW AND HEBBURN-ON-TYNE). All classes of war and mercantile vessels. Build internal combustion, steam turbine and reciprocating engines, water-tube and Scotch boilers. Fully equipped for all classes of repairs to hulls and machinery. Twelve slips. Employees: 9000. Has two docks: Hebburn, 700 × 90 × 29 ft.; Jarrow, 440 × 70 × 18 ft.; also patent slipway (Jarrow), and dry dock at Swansea, 560 × 75 × 26 feet—all suitable for warships and mercantile vessels.

Scotts'.

SCOTTS' SHIPBUILDING & ENGINEERING CO., LTD. (GREENOCK). Ships for eight large vessels; fitting-out basin; graving dock. Makers of heavy oil engines and licensees for Laurenti type of submarines.

Stephen.

ALEX. STEPHEN & SONS, LTD. (LINTHOUSE, GOVAN, GLASGOW). Build destroyers and torpedo craft; also mail, passenger and cargo steamers. Machinery: all types, 40,000 H.P. output per annum. Boilers: Scotch, cylindrical and all water-tube types. Seven building berths for building ships up to 700 ft. long. Water front: 1500 ft. Area of yard: 52 acres. Repairs of all classes to hulls and machinery at firm's Govan graving dock. Works adjacent to Glasgow Docks.

Swan Hunter.

SWAN, HUNTER & WIGHAM RICHARDSON, LTD. (WALLSEND-ON-TYNE). Nineteen building berths, served by overhead electric cranes. Four of the largest berths covered in. Annual *gross* shipbuilding capacity, 150,000 tons. Engine works: 60,000 H.P. output per year.

The dry dock dept. includes a large repairing yard with two graving docks and a floating dock. Engine works build marine oil engines of the Neptune type, also Metropolitan-Vickers Rateau marine steam turbines, and reciprocating steam engines. Total area of works: 78 acres. Water frontage: 4000 ft. Shipyard also at Southwick-on-Wear, with four building berths. Allied firms are the Wallsend Slipway & Engineering Co., Ltd., Wallsend; Barclay Curle & Co., Ltd., of Whiteinch, Govan, Elderslie and Glasgow; North of Ireland Shipbuilding Co., Ltd., Londonderry; Philip & Son, Ltd., Dartmouth; Harris Bros., Ltd., Cambrian Dry Docks, Swansea; Lindsay, Swan, Hunter, Ltd., salvage contractors, Sunderland.

Thornycroft.

JOHN I. THORNYCROFT & CO., LTD. (WOOLSTON, SOUTHAMPTON). Builders of torpedo boats, destroyers, light cruisers, merchant vessels up to 400 ft. Thirteen building berths, including three covered in. One hauling-up slip for ships up to 170 ft. long. Water frontage: 2000 ft. Opposite Southampton Docks. Specialities: Turbines, water-tube boilers, oil fuel gear. Workshops in Southampton Docks, adjacent to fitting-out dock for hull and machinery repairs. Total floor area: 25,000 sq. ft.

Vickers—Armstrongs. (B)

(See also Vickers—Armstrongs (A) details on preceding page.)

VICKERS, LTD. (BARROW-IN-FURNESS). Area of works: 105 acres. Thirteen building berths, of length respectively 800 ft.; 750 ft.; 700 ft.; 630 ft.; two of 600 ft.; three of 550 ft.; 450 ft.; 400 ft.; and 350 ft.—the two latter being entirely under cover; all berths efficiently served by modern cranes, lattice work derricks and electric winches. Fitting-out basin equipped with two 150-ton Giant Hammer-head cranes, 30-ton electric jib crane, two 10-ton steam derrick cranes, one 18-ton steam travelling crane, and numerous others, with a full complement of winches and capstans. Floating dock, 420 × 59½ ft., to lift 5200 tons. Graving dock, 500 × 60 × 22 ft. Extensive shops fully equipped with the most modern machinery for the construction of steam and internal combustion engines, boilers, electric equipment, gun mountings, and every kind of naval and mercantile engineering work. (Overseas Branch: Canadian Vickers Co., Montreal.) Agencies all over the world.

White.

J. SAMUEL WHITE & CO., LTD. (COWES). The oldest shipyard on the Admiralty List. Light cruisers, gunboats, flotilla leaders, destroyers, submarines, minelayers, patrol boats, turbine pinnaces, and small naval craft of every kind. Seven building berths. Engine works for reciprocating and turbine engines of highest powers, "White-Forster" water-tube boilers, "White" Diesel engines, and "White" patent oil fuel installations. Hammer-head 80-ton crane.

Yarrow.

YARROW & CO., LTD. (SCOTSTOUN, GLASGOW). Area of yard: 16 acres. Water frontage: 750 ft. Six building berths, for ships up to 400 ft. long. Wet basin for fitting-out, 350 × 85 ft., served by 50-ton crane. Specialities are destroyers, fast yachts, vessels for shallow river navigation, both of stern-wheel type and of type propelled by screws working in tunnels. Yarrow water-tube boilers and Yarrow superheater, both for land and marine use. Also vessels propelled by internal-combustion motors. (Overseas Branch: Yarrow's, Ltd., Victoria, B.C.)

Other Private Firms in the British Isles.

Shipbuilders—BRITISH

Majority build engines, &c.

Those whose names are in heavy type built Monitors, Sloops, Minesweepers, Patrol Gunboats, Patrol Boats, &c. during the War.

Shipbuilders.

AILSA Shipbuilding Co., Ltd., Troon and Ayr.
ALLEY & Maclellan, Ltd., Polmadie, Glasgow.
ARDROSSAN Dockyard Ltd., Ardrossan.
AUSTIN, S. P. & Son, Ltd., Sunderland.
AYRSHIRE Dockyard Co., Ltd., Irvine.
BARCLAY CURLE & Co., Ltd., Whiteinch and Scotstoun, Glasgow.
BARTRAM & Sons, Ltd., Sunderland.
BLYTHSWOOD Shipbuilding Co., Ltd., Scotstoun, Glasgow.
BOW, McLachlan & Co., Ltd., Paisley.
BROOKE, J. W. & Co., Ltd., Lowestoft.
BROWN, George & Co., Greenock.
BURNTISLAND Shipbuilding Co., Ltd., Burntisland (near Rosyth).
CALEDON Shipbuilding and Engineering Co., Ltd., Dundee & Stannergate.
CAMPBELTOWN Shipbuilding Co., Ltd., Campbeltown.
CAMPER & NICHOLSONS, Ltd., Gosport and Southampton.
CHAMBERS, John, Ltd., Lowestoft.
CLEVELAND Shipbuilding Co., Ltd. (incorporating Sir Raylton Dixon & Co. and W. Harkess & Son), Middlesbrough.
COASTER CONSTRUCTION Co., Ltd., Rossie Island, Montrose.
COCHRANE & Sons, Ltd., Selby.
CONNELL, Charles & Co., Ltd., Scotstoun.
COOK, Welton & Gemmell, Ltd., Thornaby Yard, Beverley.
COWPEN Dry Docks & Shipbuilding Co., Ltd., Blyth (late Blyth S.B. & D.D. Co.).
COX & Co., Engineers, Ltd., Falmouth.
CRABTREE & Co., Ltd., Great Yarmouth.

CRAIG, Taylor & Co., Ltd., Stockton-on-Tees.
CRICHTON (J.) & Co., Ltd., South Saltney, Chester.
CROWN, John & Sons, Ltd., Sunderland.
DUNCAN, E. & Co., Ltd., Port Glasgow.
EARLE'S Shipbuilding and Engineering Co., Hull.
EDWARDS & Co., Ltd., Millwall.
ELTRINGHAMS, Ltd., Willington Quay, S. Shields.
FELLOWS & Co., Ltd., South Town Dry Docks, Great Yarmouth.
FERGUSON Bros., Port Glasgow, Ltd.
FLEMING & Ferguson, Ltd., Paisley.
FURNESS Shipbuilding Co., Ltd., Haverton Hill-on-Tees.
GOOLE Shipbuilding & Repairing Co., Ltd., Hull.
GRANGEMOUTH Dockyard Co., Ltd., Grangemouth.
GRAY, W. & Co., Ltd., West Hartlepool and Wear Yard, Sunderland.
GREENOCK Dockyard Co., Ltd., Greenock.
HALL, A. & Co., Ltd., Aberdeen.
HALL, Russell & Co., Ltd., Aberdeen.
HAMILTON, William & Co., Ltd., Port Glasgow.
HENDERSON, D. & W. & Co., Ltd., Partick, Glasgow.
HILL, Charles & Sons, Bristol.
INGLIS, A. & J., Ltd., Glasgow.
IRVINE'S Shipbuilding & Dry Docks Co., Ltd., Middleton Yd., Hartlepool.
LAING, Sir James & Sons, Ltd., Sunderland.
LEWIS, J. & SONS, Ltd., Aberdeen.
LITHGOW'S Ltd. (late Russell & Co.), Port Glasgow.
LOBNITZ & Co., Ltd., Renfrew.
LYTHAM Shipbuilding & Engineering Co., Ltd., Lytham, Lancs.
McMILLAN, A. & Son, Ltd., Dumbarton.
MANCHESTER Dry Docks Co., Ltd., Manchester.
MENZIES & Co., Ltd., Leith.
NAPIER & Miller, Ltd., Old Kilpatrick, Glasgow.

NORTHUMBERLAND Shipbuilding Co., Ltd., Howdon-on-Tyne.
OSBOURNE, Graham & Co., Ltd., Sunderland.
PHILIP & Son, Ltd., Dartmouth.
PICKERSGILL, Wm. & Sons, Ltd., Sunderland.
PIMBLOTT, I. & Sons, Ltd., Northwich.
PRIESTMAN, Sir John & Co., Sunderland.
RAMAGE & Ferguson, Ltd., Leith.
READHEAD, J. & Sons, Ltd., South Shields.
RENNOLDSON, Chas. & Co., South Shields.
RENNOLDSON, J. P. & Sons, South Shields.
RICHARDSON, DUCK & Co., Ltd., Stockton-on-Tees.
ROSE Street Foundry and Engineering Co., Inverness.
SCARR, Henry, Ltd., Hessle, Hull.
SCARR, T. H., Howden.
SCOTT & Sons, Bowling, nr. Glasgow.
SHORT Bros., Ltd., Pallion, Sunderland.
SHRUBSALL, H., East Greenwich.
SIMONS, Wm. & Co., Ltd., Renfrew.
SMITH'S Dock Co., Ltd., Middlesbrough-on-Tees.
THOMAS, W. & Sons, Amlwch, Anglesey.
THOMPSON, J. L. & Sons, Ltd., Sunderland.
THOMPSON, R. & Sons, Ltd., Sunderland.
WARREN'S New Holland Shipyards, Ltd., New Holland, Lincs.
WATSON, J. S., Gainsborough, Ltd.
WHITBY Shipbuilding Co., Ltd., Whitby.
WHITE'S Southampton Yachtbuilding & Engineering Co., Ltd.
WHITE, Wm. & Sons, Cowes, I. W.
WILLIAMSON, R. & Son, Ltd., Workington.
WILLOUGHBY (Plymouth), Ltd., Plymouth.
WOOD, SKINNER & Co., Ltd., Newcastle-on-Tyne.
WORKMAN, CLARK & Co., Ltd., Belfast.
YARWOOD, W. J. & Sons, Ltd., Castle Dock, Northwich, Cheshire.

Marine Engine Builders (Exclusive of Diesel Engine builders).

ABERNETHY, J. & Co., Aberdeen.
AITCHISON, Blair, Ltd., Clydebank.
ALLEN, W. H., Son & Co., Ltd., Bedford.
AMOS & Smith, Ltd., Hull.
BLAIR & Co., Ltd., Stockton-on-Tees.
CAMPBELL & Calderwood, Paisley.
CENTRAL Marine Engine Works Wm. Gray & Co., Ltd., West Hartlepool.
CLARK, G., Ltd., Sunderland.
DICKINSON, J. & Sons, Ltd., Sunderland.
ELLIOTT & Garrod, Ltd., Beccles.
FISHERS, Ltd., Paisley.
GAULDIE, Gillespie & Co., Glasgow.
HOLMES, C. D. & Co., Ltd., Hull.
HUTSONS, Ltd., Kelvinhaugh, Glasgow.
KINCAID, J. G. & Co., Ltd., Greenock.
MacCOLL & Pollock, Ltd., Sunderland.
McKIE & Baxter, Glasgow.
METROPOLITAN-VICKERS Electrical Co., Ltd., Trafford Park, Manchester.
MUIR & Findlay, Glasgow.
MUMFORD, A. G., Ltd., Colchester.
NORTH-EASTERN Marine Engineering Co., Ltd., Wallsend-on-Tyne and Sunderland.
PARSONS Marine Steam Turbine Co., Ltd., Wallsend.
PLENTY & Son, Ltd., Newbury.
RANKIN & Blackmore, Ltd., Greenock.
RICHARDSONS, WESTGARTH & Co., Ltd., Hartlepool.
RITCHIE, J., Partick.
ROWAN, David & Co., Ltd., Glasgow.
SHIELDS Engineering and Dry Docks Co., Ltd., North Shields.
SISSON, W. & Co., Ltd., Gloucester.
WALLSEND Slipway and Engineering Co., Ltd., Wallsend (Dock 540 ft. long).

BRITISH—Silhouettes.

ONE FUNNEL OR NONE.

BRITISH SEA-GOING WARSHIPS AND AUXILIARIES: RECOGNITION SILHOUETTES.

Strictly Copyright: Completely Re-drawn 1927. (Not all to equal scale.)

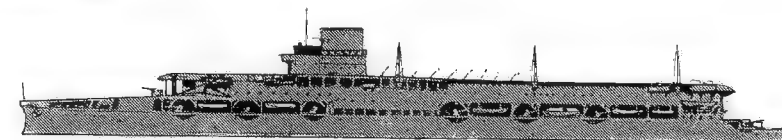
ONE FUNNEL OR NONE.



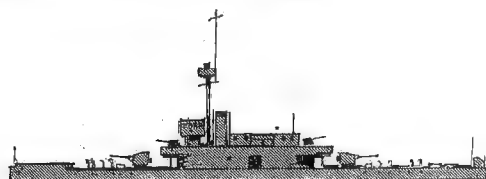
ARGUS.



FURIOUS.



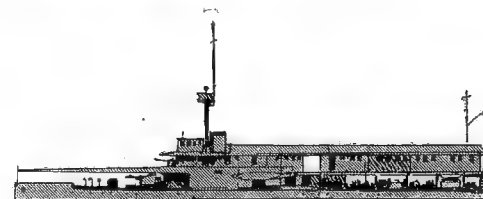
COURAGEOUS.



SCARAB class (2 funnels abreast).



SPEY.



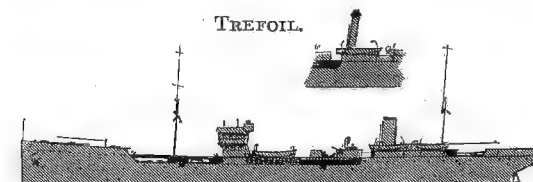
BEE (2 funnels abreast).



DART and PC 74.



P40, P59.



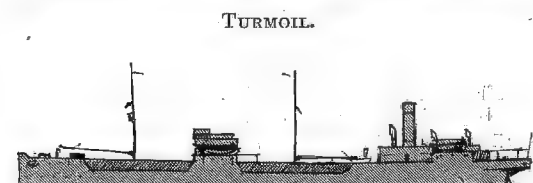
TREFOIL.



PETROBUS class (3).



BIRCHOL (8), DISTOL (4), ATTENDANT (2).



TURMOIL.



DREDGOL.

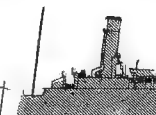


SCOTOL.

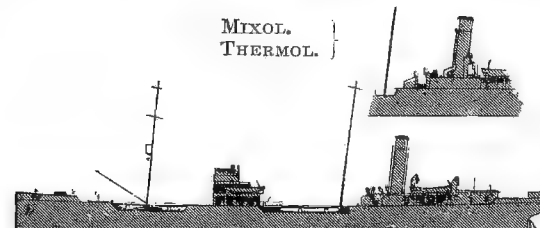


WAR KRISHNA type.

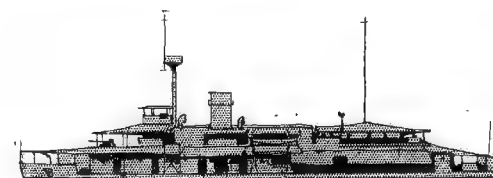
MIXOL.
THERMOL.



BRITISH BEACON class (4).



BURMA.



SEAMEW, TERN.

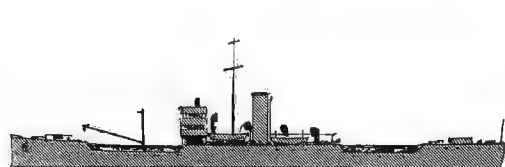
ONE FUNNEL.

BRITISH SEA-GOING WARSHIPS AND AUXILIARIES : RECOGNITION SILHOUETTES.

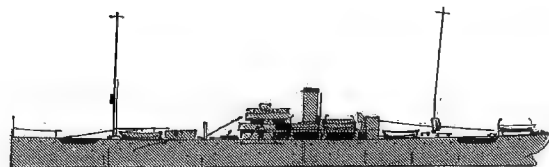
Strictly Copyright: Completely Re-drawn 1927.

Silhouettes—BRITISH

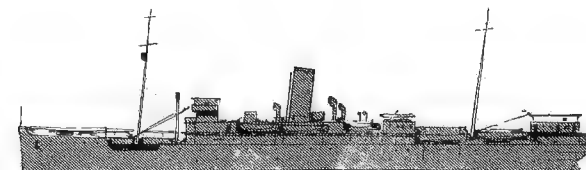
ONE FUNNEL.



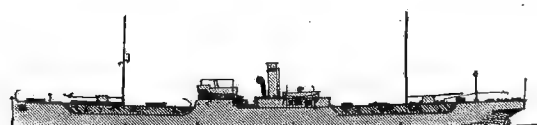
FRANCOL (3).



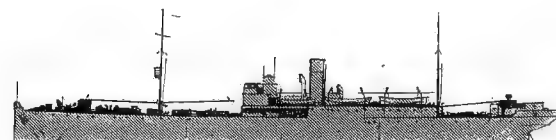
PERTSHIRE.



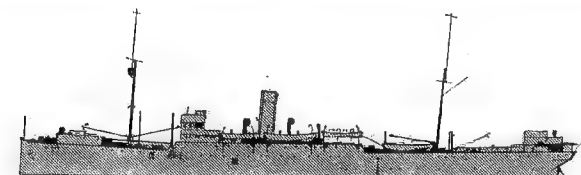
AMBROSE.



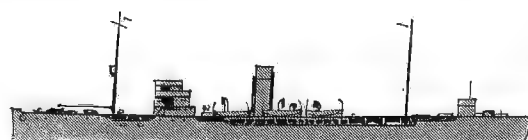
WARAFRIDI *type*.



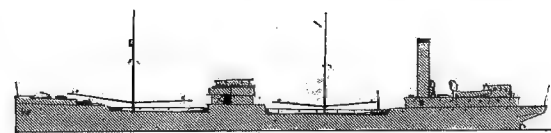
BACCHUS.



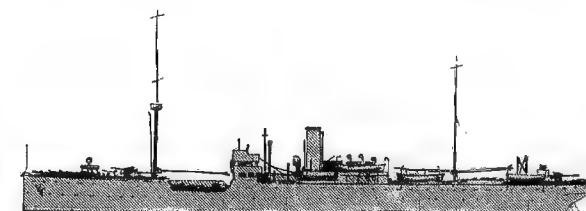
ASSISTANCE.



PLUMLEAF *type*.



NUCULA. (N.Z.)



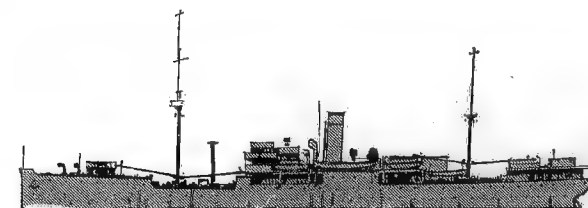
GREENWICH.



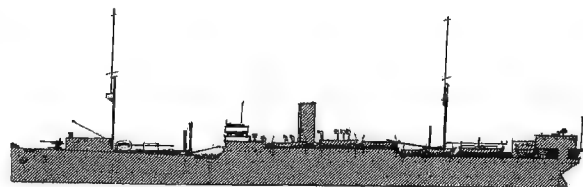
BELGOL (6).



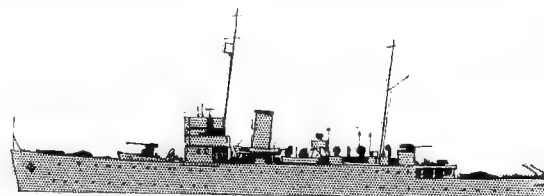
PETROLEUM.



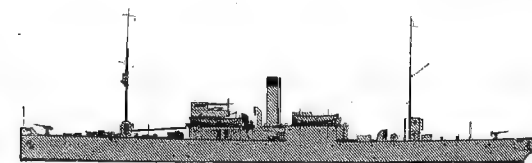
LUCIA.



CYCLOPS.



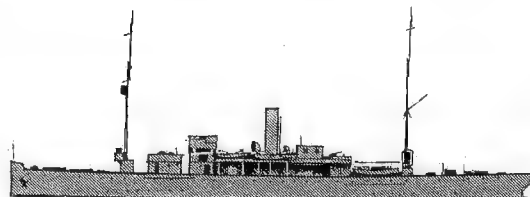
BRIDGEWATER, SANDWICH.



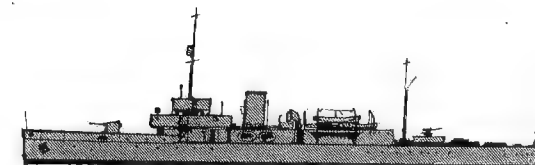
CHRYSANTHEMUM



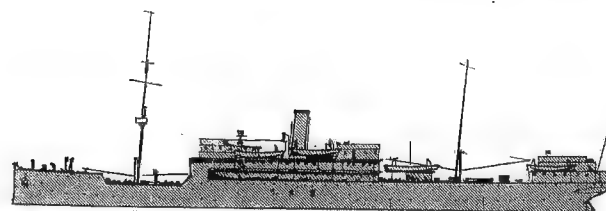
SANDHURST.



BRYONY.



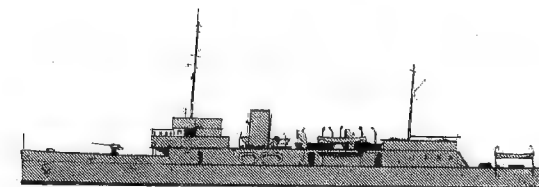
Twin Screw Minesweepers.



TITANIA.



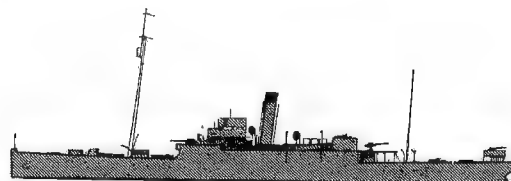
HEATHER.



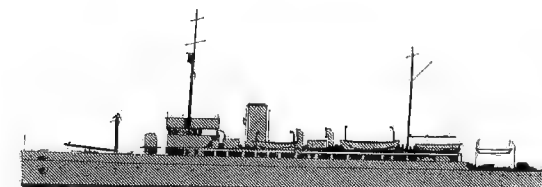
Twin Screw Minesweepers as Tenders.



HERALD (3), MORESBY. (R.A.N.)



HAREBELL.



FLINDERS (4).

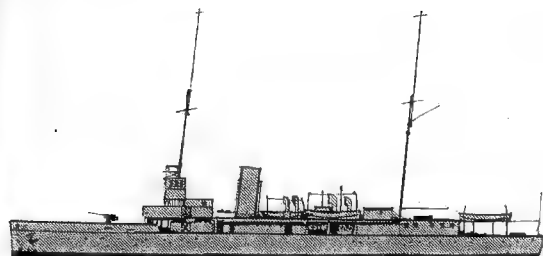
BRITISH SEA-GOING WARSHIPS AND AUXILIARIES.—RECOGNITION SILHOUETTES.

Silhouettes—BRITISH.

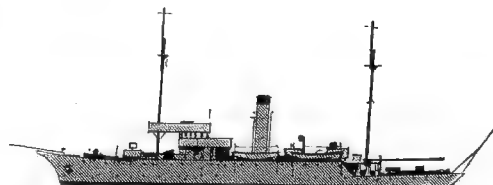
ONE FUNNEL.

Strictly Copyright: Completely Re-drawn 1927.

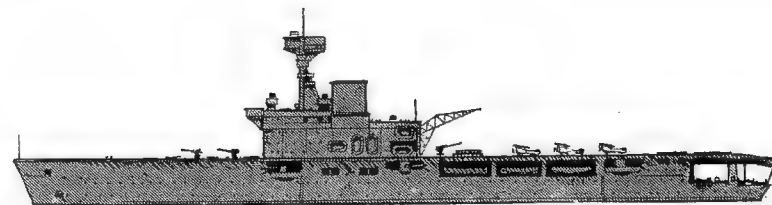
ONE FUNNEL.



PETERSFIELD.



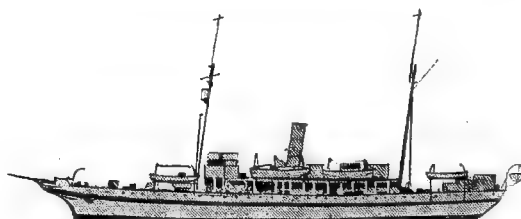
ALECTO, ADAMANT.



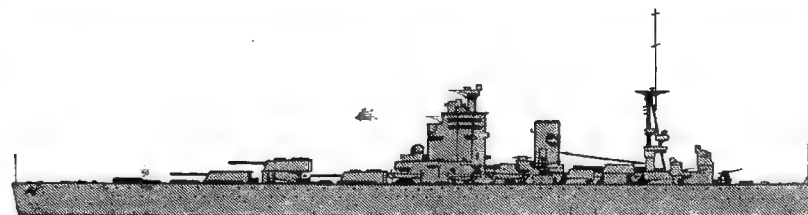
HERMES.



CACHALOT.



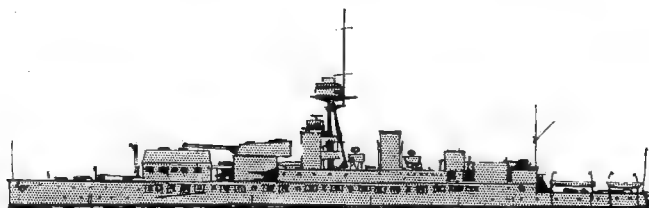
ENDEAVOUR.



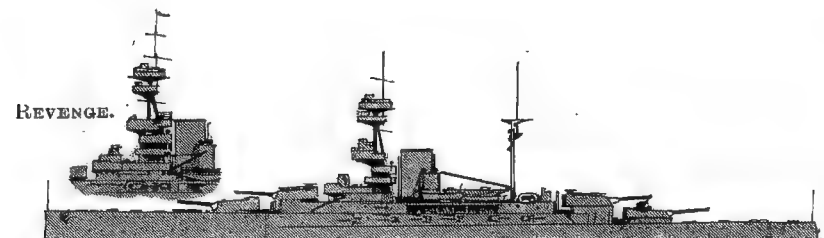
NELSON & RODNEY.



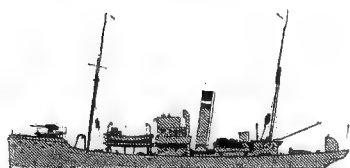
DEE Type Trawlers.



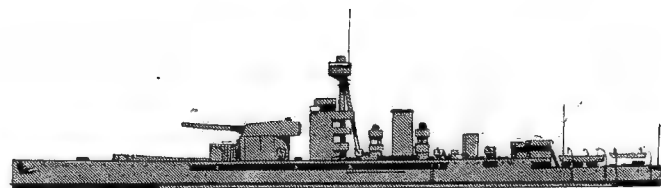
EREBUS.



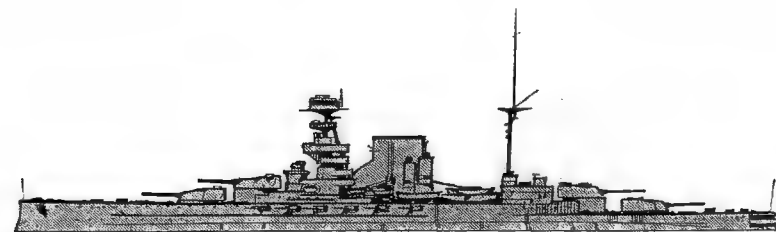
ROYAL SOVEREIGN class.



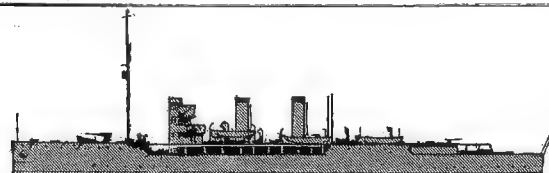
"Mersey" Type Trawlers.



TERROR.



Q. ELIZABETH, WARSPITE, MALAYA.



MARGUERITE. (R.A.N.)



CROCUS.



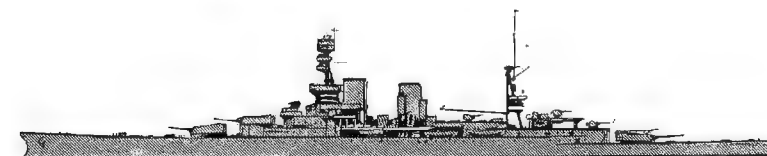
TRIAD.



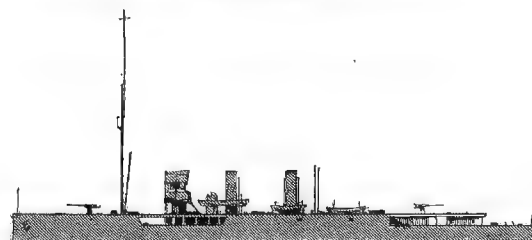
CLEMATIS.



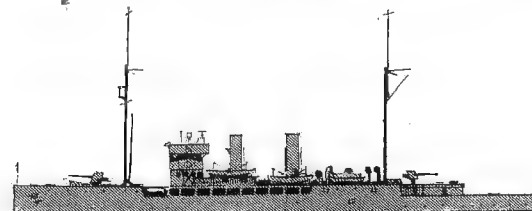
MALLOW. (R.A.N.)



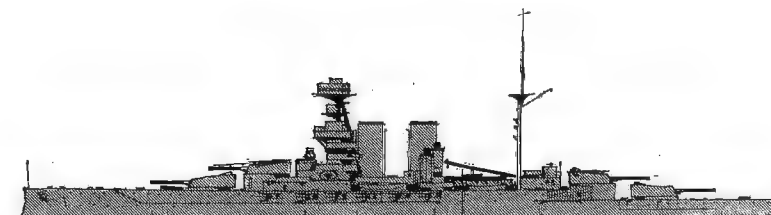
REOWN, REPULSE.



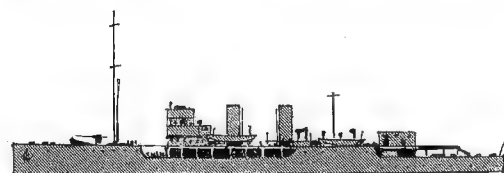
CORNFLOWER.



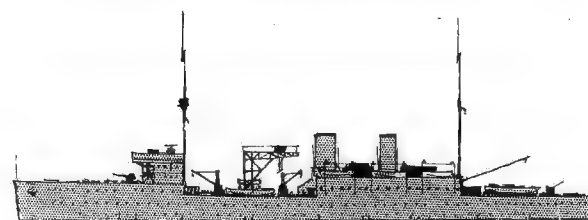
CYCLAMEN, (4) GODETIA.



BARHAM, VALIANT



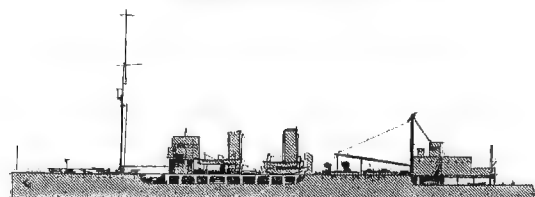
GERANIUM. (R.A.N.)



RESOURCE.



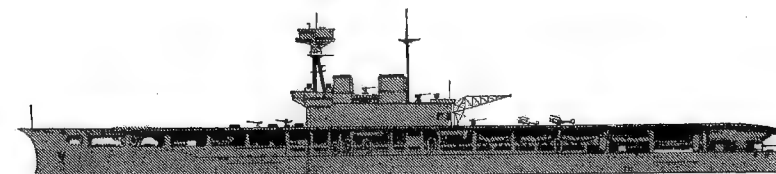
HOOD.



SNAPDRAGON.



MEDWAY.



EAGLE.

BRITISH SEA-GOING WARSHIPS AND AUXILIARIES: RECOGNITION SILHOUETTES.

Silhouettes.—BRITISH

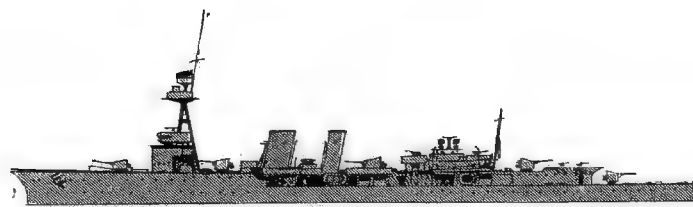
TWO FUNNELS.

Strictly Copyright: Completely Re-drawn 1927.

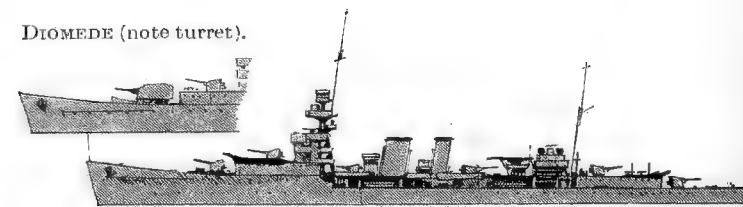
TWO FUNNELS.



CALLIOPE, CAMBRIAN, CANTERBURY, CASTOR, CONSTANCE.



CONCORD.
(CENTAUR similar with deckhouse in place of gun abaft foremast).

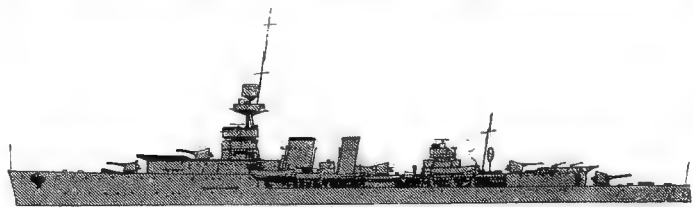


DIOMEDE (note turret).

DELHI, DURBAN, DESPATCH, DIOMEDE (N.Z.), DUNEDIN (N.Z.).
(Trawler bow.)



CHAMPION. (S.L. Control Tower amidships.)

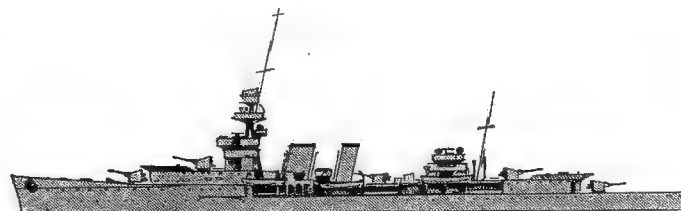


CERES, CARDIFF, COVENTRY, CURAÇOA, CURLEW.
(Note No. 2 gun on shelter deck forward.)

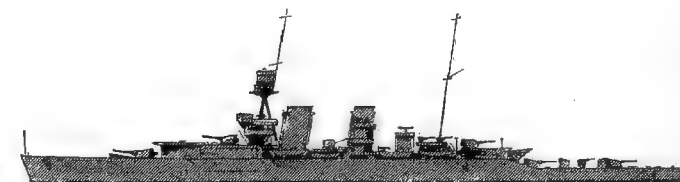


CALYPSO.

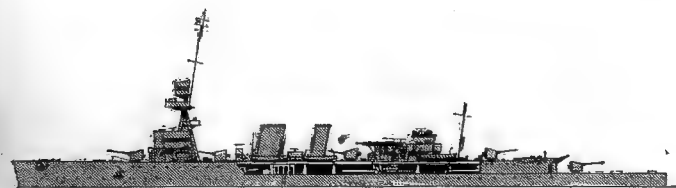
CARADOC, CALYPSO.



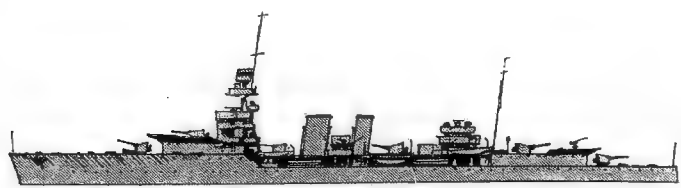
CAPTOWN, CAIRO, CALCUTTA, CARLISLE, COLOMBO
(Trawler bow.)



HAWKINS. EFFINGHAM. FROBISHER.



CALEDON.
(Note flight platform.)



DANAE, DAUNTLESS, DRAGON.
(No. 3 gun abaft foremast.)



VINDICTIVE.

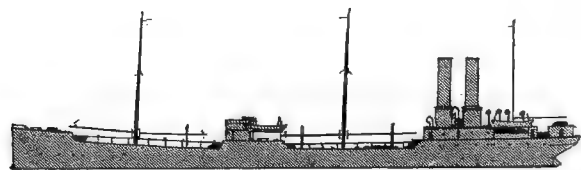
BRITISH—Silhouettes.

BRITISH SEA-GOING WARSHIPS AND AUXILIARIES: RECOGNITION SILHOUETTES.

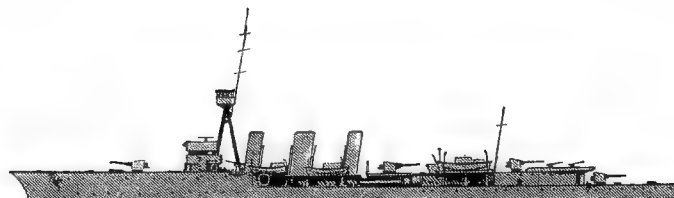
TWO and THREE FUNNELS.

Strictly Copyright: Completely Re-drawn 1927.

TWO, THREE & FOUR FUNNELS.



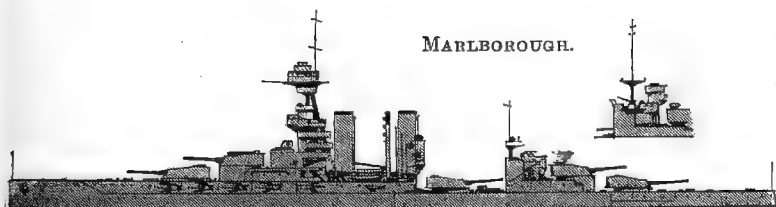
DELPHINULA



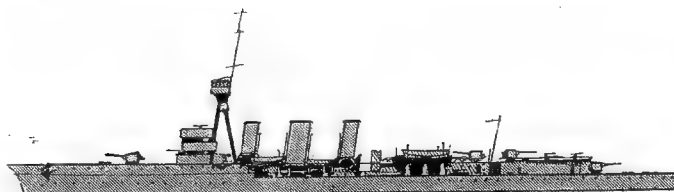
CARYSFORT, COMUS.



EMERALD.



MARLBOROUGH.



CLEOPATRA.

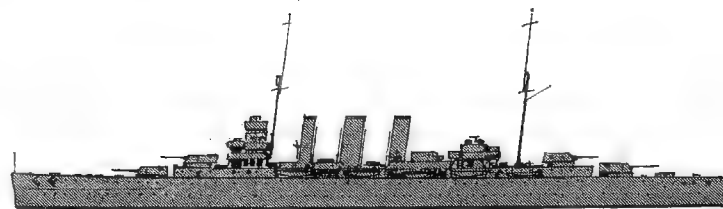


ENTERPRISE.

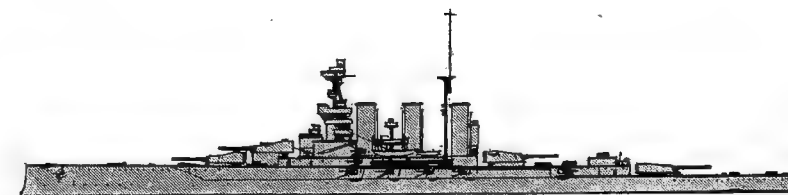
BENDOW, E. OF INDIA. IRON DUKE, MARLBOROUGH.



ADVENTURE.



BERWICK, CORNWALL, CUMBERLAND, KENT, SUFFOLK,
AUSTRALIA (R.A.N.), CANBERRA (R.A.N.)



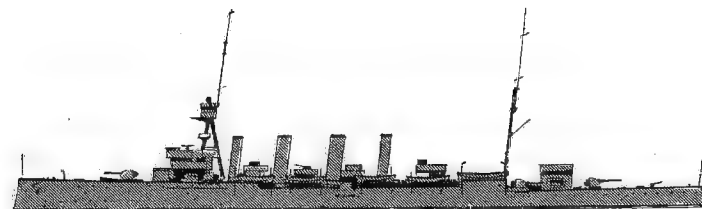
TIGER.

BRITISH SEAGOING WARSHIPS & AUXILIARIES, etc: RECOGNITION SILHOUETTES.

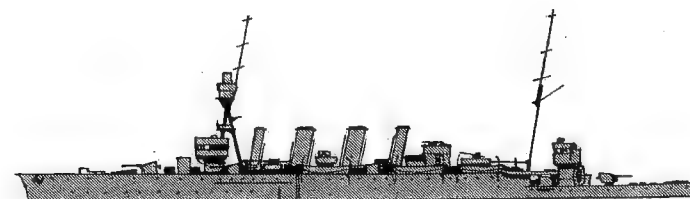
Silhouettes.—BRITISH

FOUR FUNNELS.

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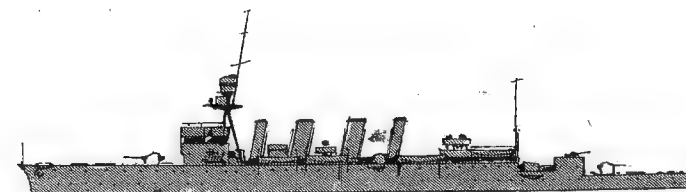
DARTMOUTH.



BRISBANE. (R.A.N.)



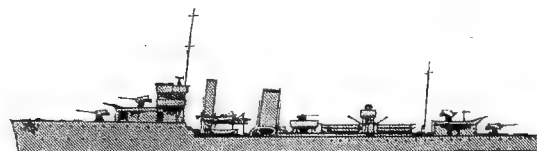
LOWESTOFT.



ADELAIDE. (R.A.N.)



TYRANT.



VICEROY, VISCOUNT, WOLSEY, WOOLSTON.



Admiralty "R" class (9).



YARROW "S."

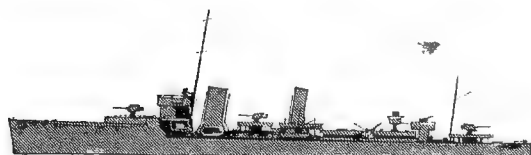
"S" class (50).



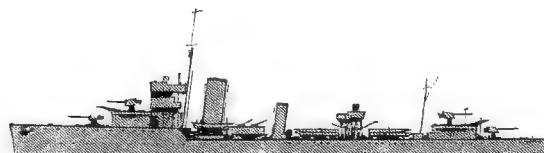
"V" and "W" classes (50).



TEAZER.



TOURMALINE.



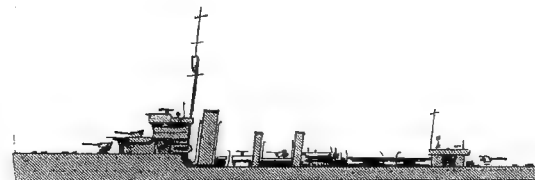
VETERAN, WILD SWAN, WIVERN, WHITSHED,
WITHERINGTON, WOLVERINE, WORCESTER.



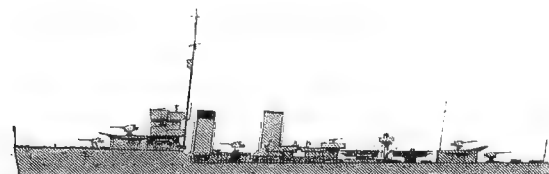
BRUCE, CAMPBELL, MALCOLM, DOUGLAS, MACKAY,
STUART. (Leaders.)



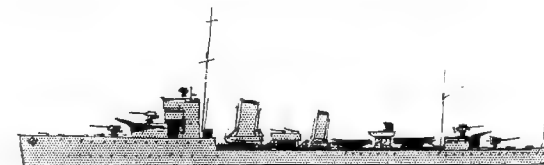
WISHART, WITCH.



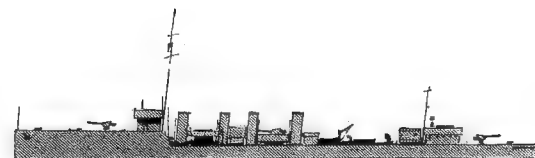
GRENVILLE, SAUMAREZ. (Leaders.)



BROKE, KEPPEL, SHAKESPEARE, SPENSER, WALLACE.
(Leaders.)



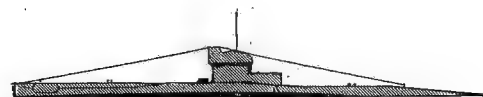
AMAZON, AMBUSCADE.



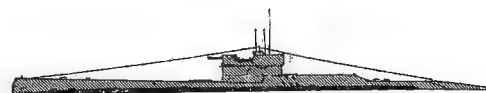
ABDIEL.

Strictly Copyright; Completely Re-drawn 1927.

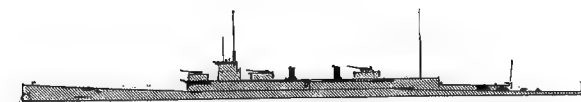
SUBMARINES.



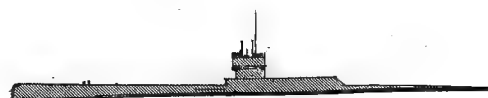
H class.



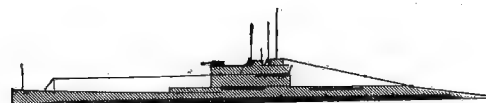
L 3—8.



K 26.



L 14, 17, 25.



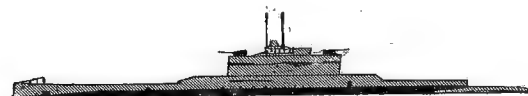
L 11—33.



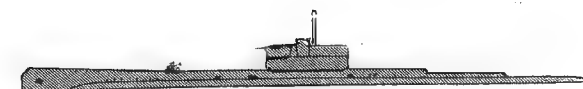
X 1.



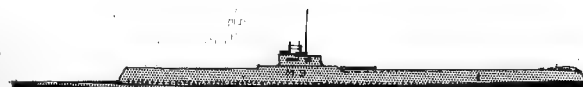
M 2.



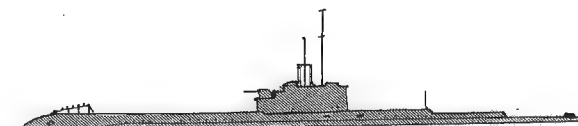
L 52—71.



OBERON.



M 3.



OTWAY, OXLEY. (R.A.N.)
ODIN class (6).



NELSON.

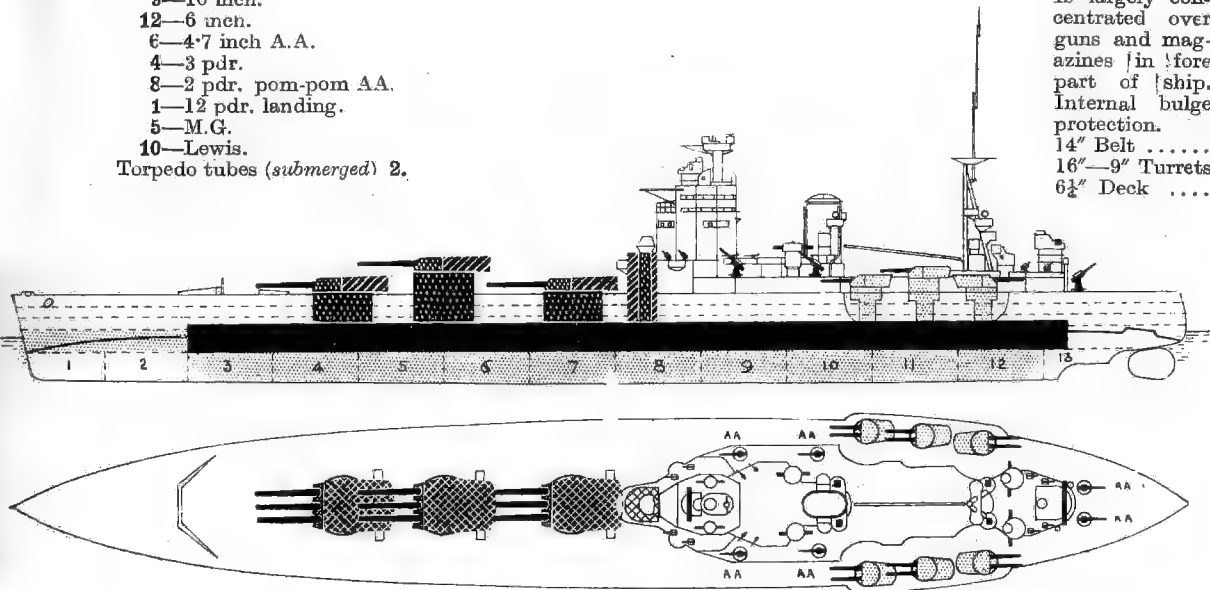
(NELSON CLASS.)

1927 Photo, Cribb.

NELSON (September 3rd, 1925), **RODNEY** (December 17th, 1925).
“Standard” displacement, 33,500 tons (*Nelson*), 33,900 tons (*Rodney*), (full load, about 40,000 tons).
Length, (p.p.) 660 feet, (w.l.) 702 feet, (o.a.) 710 feet. Beam, 106 feet. Mean draught, 30 feet.
Complement, as flagship, 1361; as private ship, 1314.

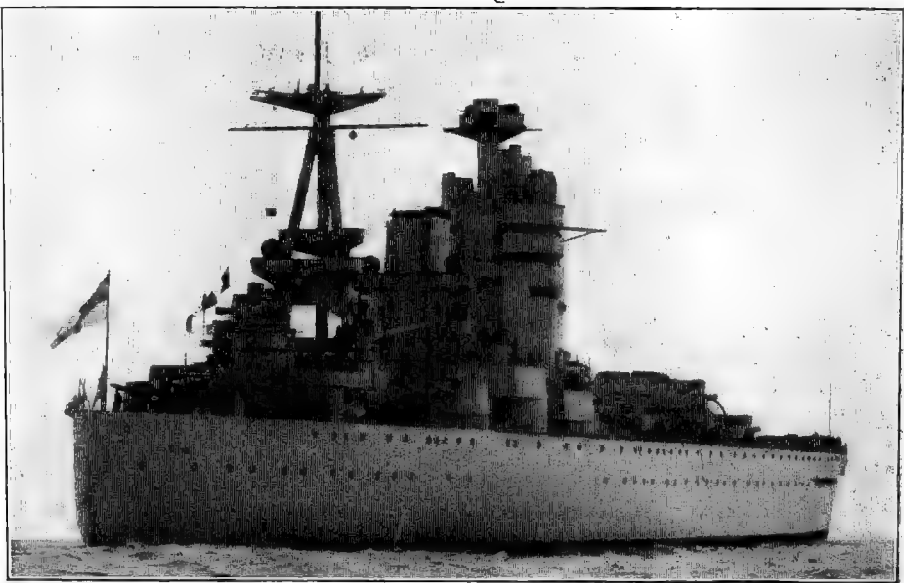
- Guns :
9—16 in.
12—6 in.
6—4·7 inch A.A.
4—3 pdr.
8—2 pdr. pom-pom A.A.
1—12 pdr. landing.
5—M.G.
10—Lewis.
Torpedo tubes (submerged) 2.

Armour :
Is largely concentrated over guns and magazines in fore part of ship.
Internal bulge protection.
14" Belt
16"—9" Turrets
6½" Deck



Machinery : Geared turbines. Boilers : 8 Yarrow. Designed H.P. 45,000=23 kts. Oil fuel : 4000 tons. Consumption : full speed, 16 tons per hour ; cruising speed, 2·7 tons per hour.

General Notes.—Both laid down under 1922-23 Programme, being the last battleships designed by Sir E. H. Tennyson d'Eyncourt while D.N.C. They are the first flush-decked battleships built for the British Navy since the *Lord Nelson* and *Agamemnon* and are said to be designed to withstand the simultaneous explosion of four torpedoes, Cost : *Nelson*, £7,405,269 ; *Rodney*, £7,488,274. Annual upkeep of this type is officially stated at £386,020, or with indirect personnel charges added, £482,960. Cost of guns and turret armour is approximately £3,000,000. Cost of engines, approximately £490,000. Steering gear is of novel design. When running at full speed the rudder can be swung right over in 30 seconds.



NELSON.

1927 Photo, Frank & Son.

(Additional photos on following page.)

Gunnery Notes.—The 16 inch B.L. gun is a new calibre in the British service, though it has already appeared in the U.S.N., in the battleships of the *Colorado* class. A similar observation applies to the triple mounting, which was first employed in the Italian battleship *Dante Alighieri*, laid down in 1909, and has also found favour in the U.S., Russian and Austrian fleets. The 16 inch gun is unofficially reported to have a range of 35,000 yards, and to be capable of piercing 17 inch armour at 10,000 yards. Maximum elevation is 40°. By grouping the big guns forward, fire control is facilitated, and the risks attendant upon locating magazines in the after part of the ship are obviated. The cost of firing a triple turret salvo is £700. Total weight of broadside is 18,500 lbs. 6 inch guns have 60° elevation, and could if desired be used as A.A. All are fitted with automatic rammers.

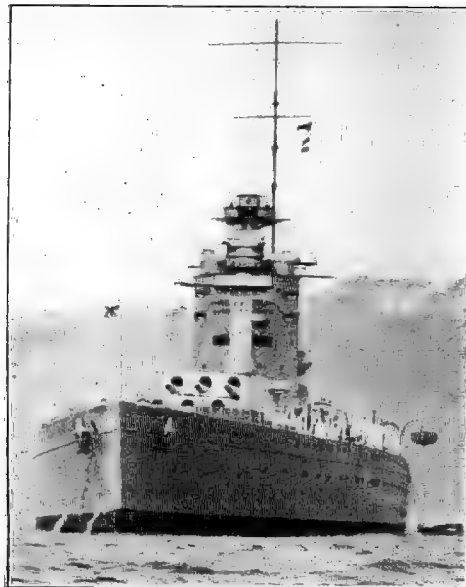
Armour Notes.—The enormous thickness of the main belt is one of the characteristic features of this design. The lines of ports which are so noticeable in both illustrations, make it apparent that the side armouring does not extend to any great height above the waterline. There are heavy bomb-proof protective decks over magazines and engine spaces. The square-topped turrets are so designed that, while a high degree of protection is afforded, the weight of the three triple mountings is no greater than that of the *Queen Elizabeth's* twin turrets.

Name	Builder	Machinery	Laid down	Completed	Trials	Boilers
<i>Nelson</i> <i>Rodney</i>	Armstrong Cammell Laird	Wallsend Co. Cammell Laird	Dec. 28, 1922	June, 1927 Aug., 1927	46,000=23·5 =23·8	Yarrow



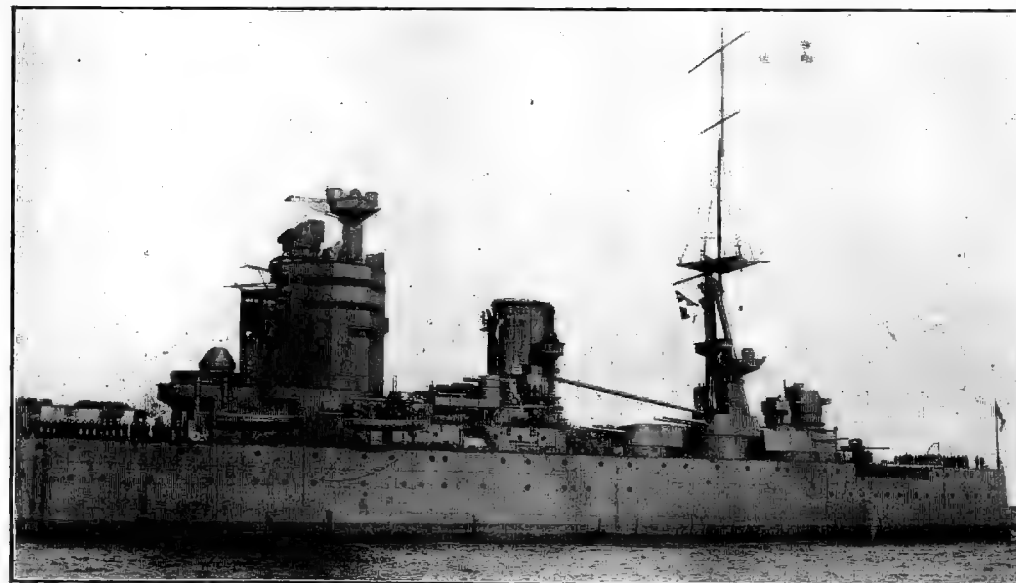
NELSON.

1927 Photo, Frank & Son.



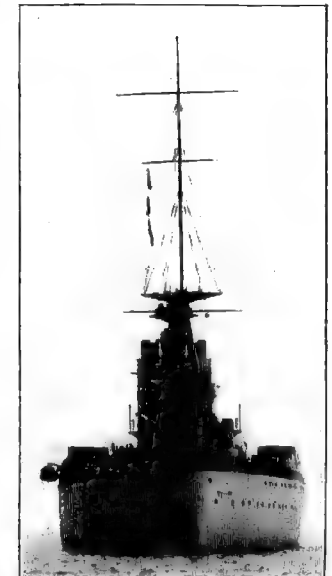
Bow view.

1929 Photo, R. Perkins, Esq.

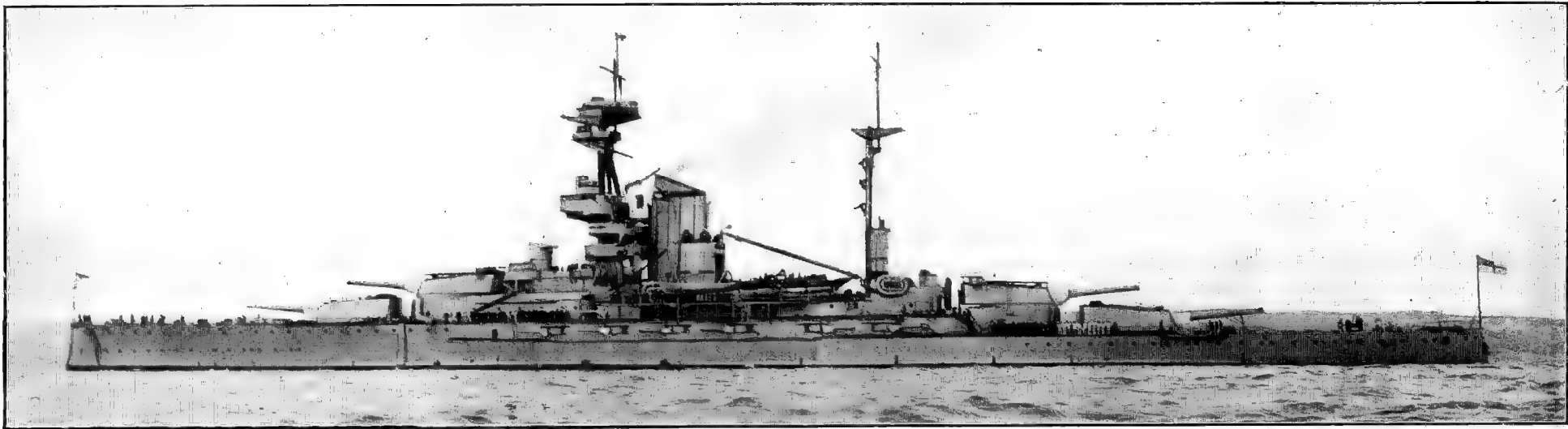


RODNEY.

1928 Photo, C. Cozens, Portsmouth.



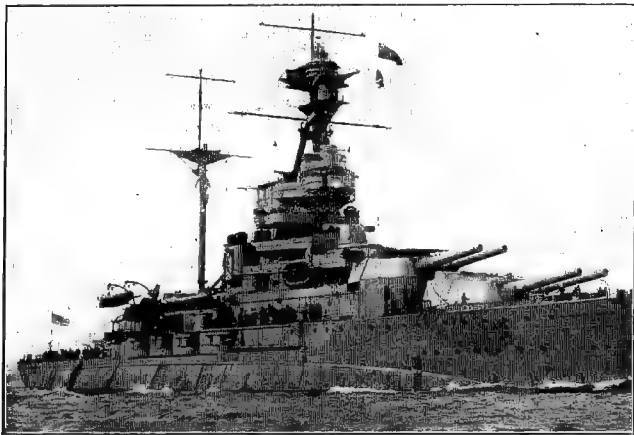
Stern view. 1927 Photo, Frank & Son.



RESOLUTION.

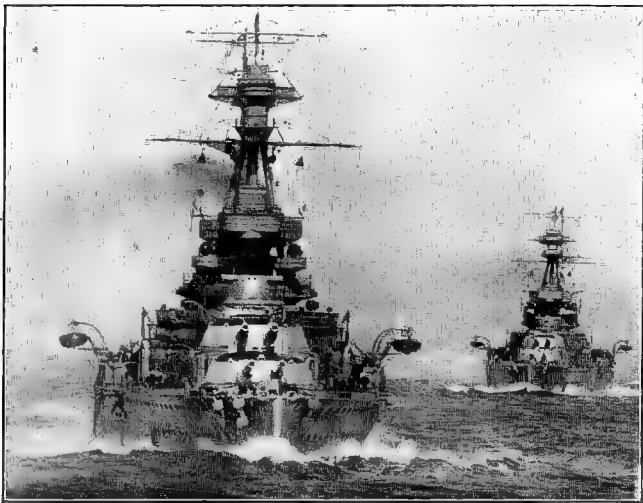
1925 Photo. Abrahams, Weymouth.

Note.—All the ships of this class now carry flying topmast on main.



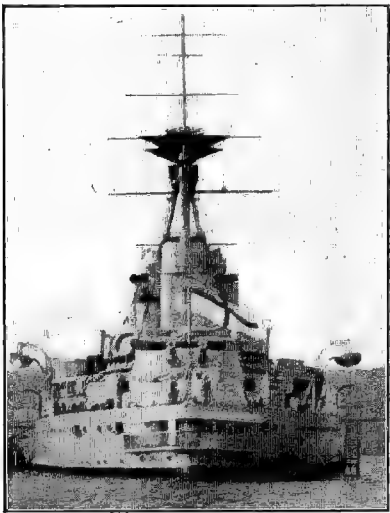
ROYAL OAK (showing bulge protection).

1924 Photo, Cribb,



ROYAL OAK (bow).

1923 Photo, Abrahams, Devonport.



REVENGE (note sternwalk). 1924 Photo W. A. Fuller, Esq.

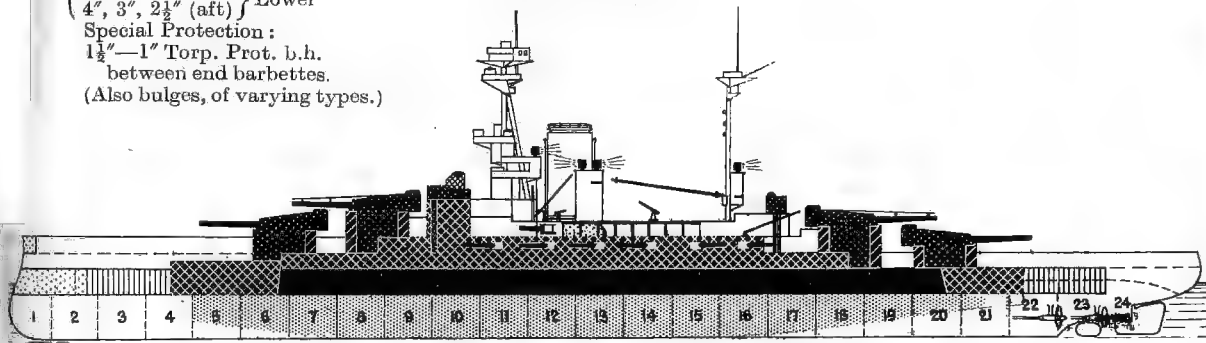
1913-14 BRITISH BATTLESHIPS.

Battleships—BRITISH

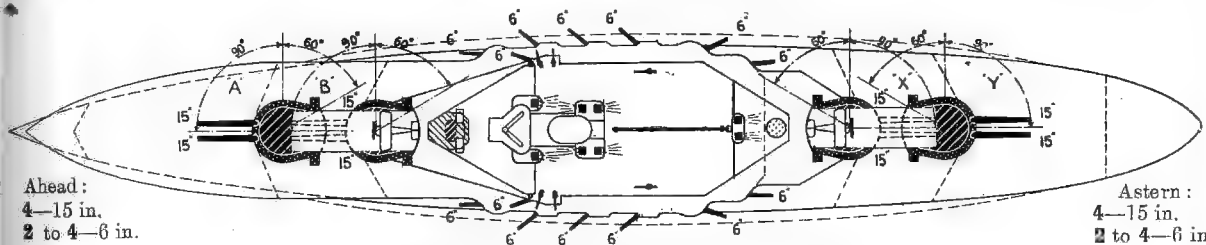
(ROYAL SOVEREIGN CLASS.)—All fitted as Flagships.
ROYAL SOVEREIGN (29th April, 1915), **ROYAL OAK** (17th Nov., 1914), **RESOLUTION** (14th Jan., 1916), **RAMILLIES** (12th Sept. 1916), **REVENGE** (29th May, 1915).
 *Normal displacement, 29,350 tons (about 32,000-33,500 tons full load). Complement, 1009-1146.
 Length (p.p.) 580 feet, (w.l.) 614½ feet, (o.a.) 620½ feet.† Beam, about 102½ feet.* Mean draught, 28½ feet.
 †Revenge 624½ feet (o.a.)

- Guns:
 8—15 inch, 42 cal. } **Dir. Con.**
 12—6 inch, 50 cal. }
 2—4 inch (anti-aircraft)
 4—3 pdr.
 1—12 pdr. Field
 5 M.G.
 10 Lewis
 Torpedo tubes (21 inch):
 4 submerged.
 Armour (H.T.):
 1" Fo'xle over Battery
 11" 1½" Upper
 2" 1½" 1" Main
 2½", 1" (forw'd) } Lower
 4", 3", 2½" (aft) }
 Special Protection:
 1½"—1" Torp. Prot. b.h.
 between end barbettes.
 (Also bulges, of varying types.)

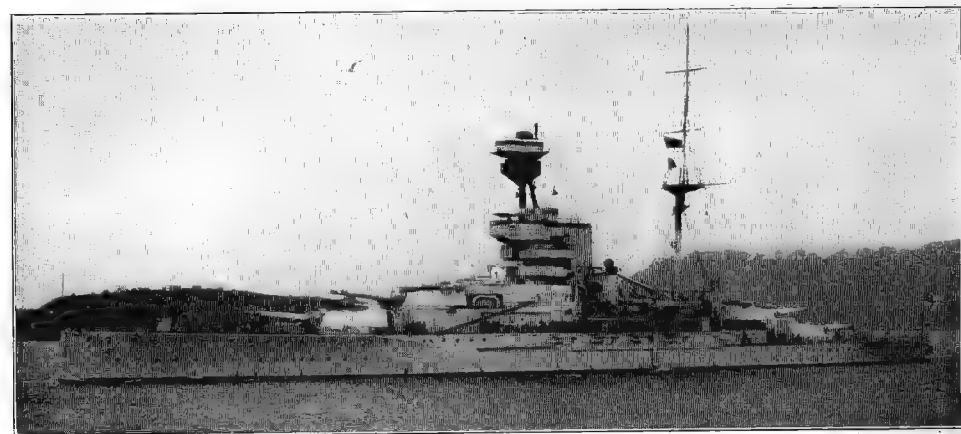
- Armour (K.C.):
 13" Belt
 6"—4" Belt (ends)
 1" Belt (bow)
 6", 4" Bulkheads(f. & a.)
 6" Battery
 10"—7" Barbettes
 13"—5" Gunhouses
 1½" Funnel uptake ...
 6"—3" C.T. Base
 11" C.T. (6"—3" hood) .
 6" Fore com. tube
 6" Torp. con. tower ...
 4" Tube (T.C. tower) ..



Note to plan: 2 upper deck 6 inch now removed.

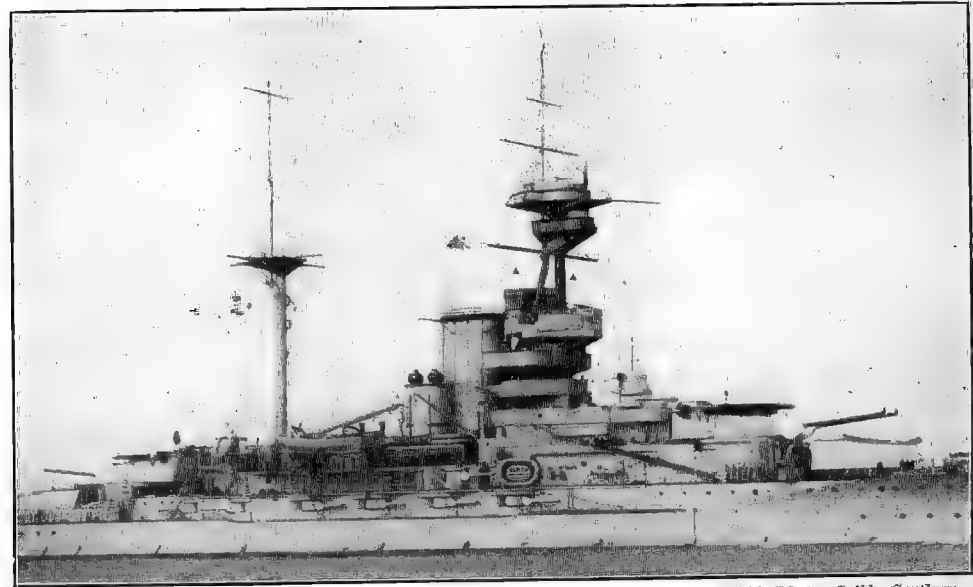


Broadside: 8—15 in., 7—6 in., 2—21 in. tubes.
 Machinery: Turbine, Parsons. Boilers: (see Notes). 4 screws. Designed H.P. 40,000 = 23 kts. without bulges, about 22 with bulges. Fuel: Oil only, normal, 900 tons; maximum, 3400 tons. Coal: 140 tons (for culinary purposes and boats).
 Gunnery Notes.—Much as *Queen Elizabeth* class. Battery differently disposed in these ships. 6 inch batteries are wet in head seas, but dwarf walls in battery retain water and it is rapidly drained away. 4 inch A.A. mounted in place of former 3 inch A.A. in most of class, 1924-25. Two superstructure 6 inch removed in 1927-28.
 Armour Notes.—Thicknesses much as *Queen Elizabeth* class, but armour differently distributed. Barbettes 6"—4" as they descend behind belt. Gunhouses, 13" face, 11" sides and rear; crowns 5". In these ships 2" protective deck has a high 2" slope behind belt, so that flat part of protection can be put on main deck and at top of belt, instead of a deck lower. Internal protection is very good, and with protective bulges, defence against underwater attack is very strong. *Royal Oak* refitted 1922-23, bulges now extending almost up to battery deck.
 Engineering Notes.—Designed to burn coal, but while building "all oil fuel" was adopted, so that 23 kts. would be secured with the resulting increase of H.P. Addition of bulges has brought speed down again to about 22 kts.
 General Notes.—Begun under 1913-14 Estimates. *Revenge* first named *Renown*. *Ramillies* injured herself at launch and was delayed in completion. They are fine ships, but suffer rather from reduced freeboard. Searchlights or main mast removed 1922. Refits: *R. Sovereign*, 1927-28; *Royal Oak*, 1922-24; *Ramillies* and *Resolution*, 1926-27; *Revenge*, 1928. *Resolution* has catapult fitted.



REVENGE.

1929 Photo, Abrahams & Son, Devonport.



REVENGE. (Note altered bridgework.)

June, 1926 Photo, Cribb, Southsea.

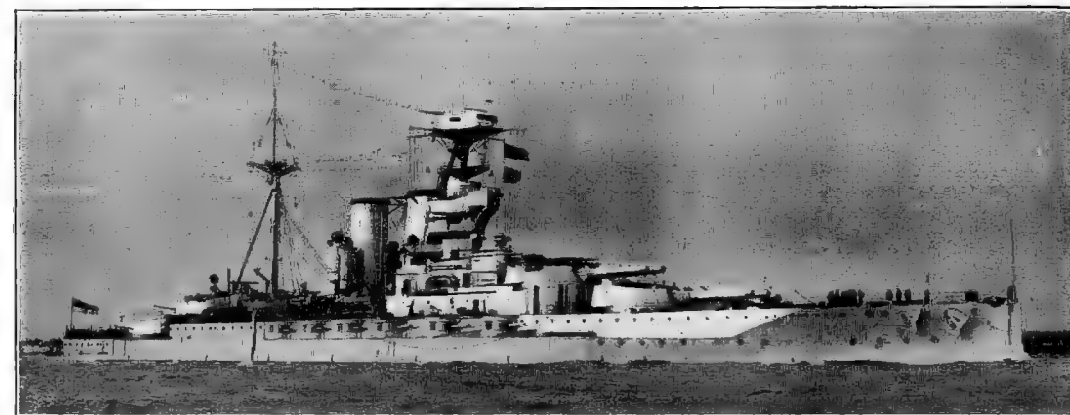
Name	Builder	Machinery	Laid down	Completed	Trials:—	Boilers	Replacement date.
<i>Royal Sovereign</i>	Portsmouth Y.	Parsons	Jan. '14	May, '16	41,115=21.6	18 Babcock	1936
<i>Royal Oak</i>	Devonport Y.	Hawthorn	Jan. '14	May, '16	40,360=	18 Yarrow	1938
<i>Resolution</i>	Palmer	Palmer	Nov. '13	Dec. '16	41,406=	18 Yarrow	1937
<i>Ramillies</i>	Beardmore*	Beardmore	Nov. '13	Sept. '17	42,356=21.5	18 Babcock	1941
<i>Revenge</i>	Vickers	Vickers	Dec. '13	Mar. '16	42,962=21.9	18 Babcock	1937

*Towed to Liverpool and completed by Cammell, Laird & Co.

(QUEEN ELIZABETH CLASS.)

QUEEN ELIZABETH (16th Oct., 1913), **WARSPITE** (26th Nov., 1913), **VALIANT** (4th Nov., 1914),**BARHAM** (31st Dec., 1914), **MALAYA** (18th Mar., 1915).

Normal displacement, 27,500 tons (about 31,000-33,000 full load). Complement, 1124-1184. All fitted as flagships.
 Length (p.p.), 600 feet. Beam, 90½ feet { Mean draught, 30½ feet. } Length (o.a.) { B.W. 643½ ft. } (u.L.) 631½ feet.
 (without bulges.) { Max. „ 33½ „ }



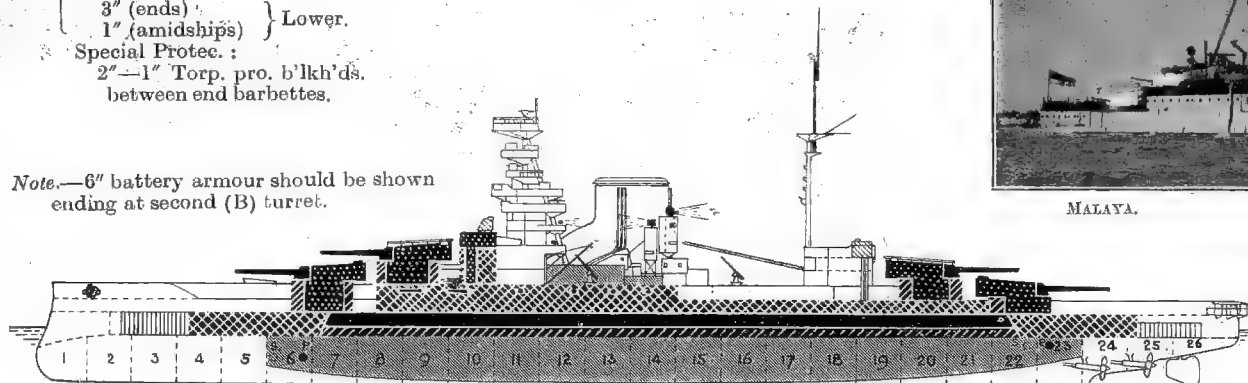
MALAYA.

1927 Photo, Cribb.

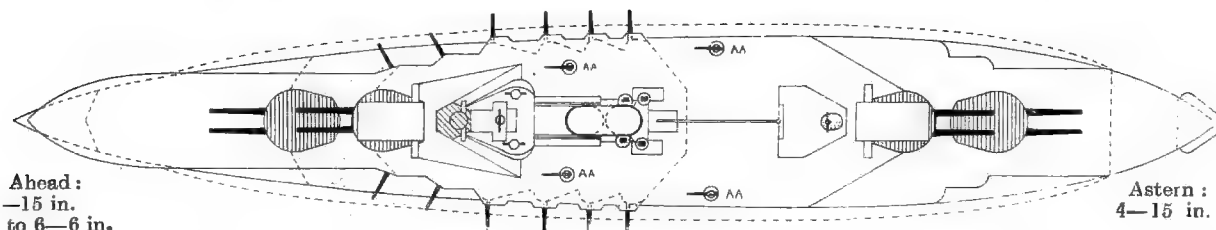
Guns :
 8—15 inch, 42 cal. } Dir. Con.
 12—6 inch, 50 cal.
 2 or 4—4 inch AA.
 4—3 pdr.
 1—12 pdr. Field.
 5 M.G.
 10 Lewis.
 Torpedo tubes (21 inch) :
 4 submerged (broadside).
 Armour (H.T.) :
 1" Fo'xle (over battery).
 2"—1½" Upper
 1½" Main fwd. & aft.
 1" Middle
 3" (ends)
 1" (amidships) } Lower.
 Special Protec. :
 2"—1" Torp. pro. b'lk'ds.
 between end barbettes.

Vertical.

Armour (K.C.) :
 13" on waterline ...
 6"—4" over w.l. ... Side
 6"—4" (ends)
 6", 4" Bulkheads (f. & a.)
 6" Battery
 10"—7" Barbettes
 11" Gunhouses
 1½" Funnel uptakes ...
 6"—3" C.T. base
 11" C.T. (6"—2" Hood)...
 4" Fore com. tube
 6" Torpedo C.T.
 4" Tube (T.C. tower) ..



Ahead :
 4—15 in.
 3 to 6—6 in.



Astern :
 4—15 in.

Broadside : 8—15 in. 6—6 in., 2—21 in. tubes.

Machinery : Parsons turbine, but *Valiant* and *Barham* have Brown-Curtis. Geared cruising turbines in all ships. Boilers : 24 large tube (see *Notes*). Designed H.P. 75,000=25 kts. Fuel : Only oil, 650 tons normal, 3400 tons max. Coal : 100 tons, for culinary purposes and boats. Radius of action : about 4400 miles.

General Notes.—First four begun under 1912 Estimates. *Malaya*, extra ship, gift of Federated Malay States. Estimated cost (average), exceeds £3,000,000 per ship. (Q. E. cost £3,014,103.) Annual upkeep=£170,416 per ship. Q.E., *Barham* and *Warspite* have stern walks. S.L. removed from positions abaft mainmast, 1923. This class is undergoing reconstruction, one ship at a time, all having been completed except *Barham* and *Valiant*. Alterations include the remodelling of control top and bridgework, addition of bulges of a modified pattern, the trunking of the forefunnel into the second, and the doubling of the anti-aircraft armament.

Gunnery Notes.—15 inch guns and mountings designed for 20° elevation. 6 inch controlled in two groups from director towers on middle bridges. Anti-aircraft armament is being doubled as ships are refitted.

Armour Notes.—Belt is 13" at w.l. only, 6" on upper edge, 8" on lower, and applied in vertical strakes. Barbettes, 6" and 4" within belt. 1½" traverses to battery, but no rear screens—only dwarf walls to retain and drain away water admitted to battery. Rear bulkhead to battery is 6" diagonal and 4" where it crosses centre line. Internal protection of these ships is very good. All this class are to be fitted with bulges.

Engineering Notes.—"All oil" installation very successful. These ships steam splendidly, and can maintain a high average speed for long periods. H.P. turbines on wing shafts, with cruising turbines geared at forward end ; L.P. turbines on inner shafts.



1924 Photos, W. A. Fuller, Esq.

Name.	Builder.	Machinery.	Laid down.	Completed.	Trials	Boilers.	Replacement due.
Queen Elizabeth	Portsmouth	Wallsend	Oct. '12	Jan., '15	57,130 =	24 Babcock	1935
Warspite	Devonport	Hawthorn	Oct. '12	Mar., '15	77,510 =	24 Yarrow	1935
Valiant	Fairfield	Fairfield	Jan. '13	Feb., '16	71,112 =	24 Babcock	1939
Barham	Clydebank	Clydebank	Feb. '13	Oct., '15	76,575 =	24 Yarrow	1935
Malaya	Elswick	Wallsend	Oct. '13	Feb., '16	76,074 =	24 Babcock	1936

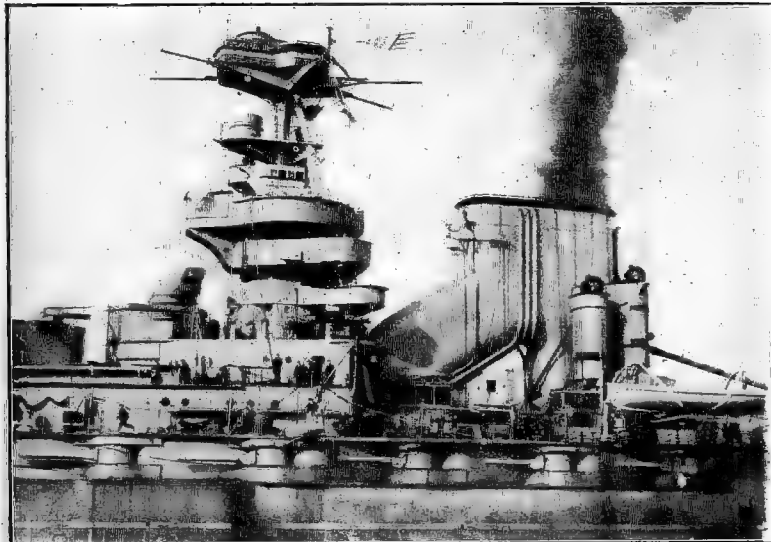


*See notes
also*

WARSPITE

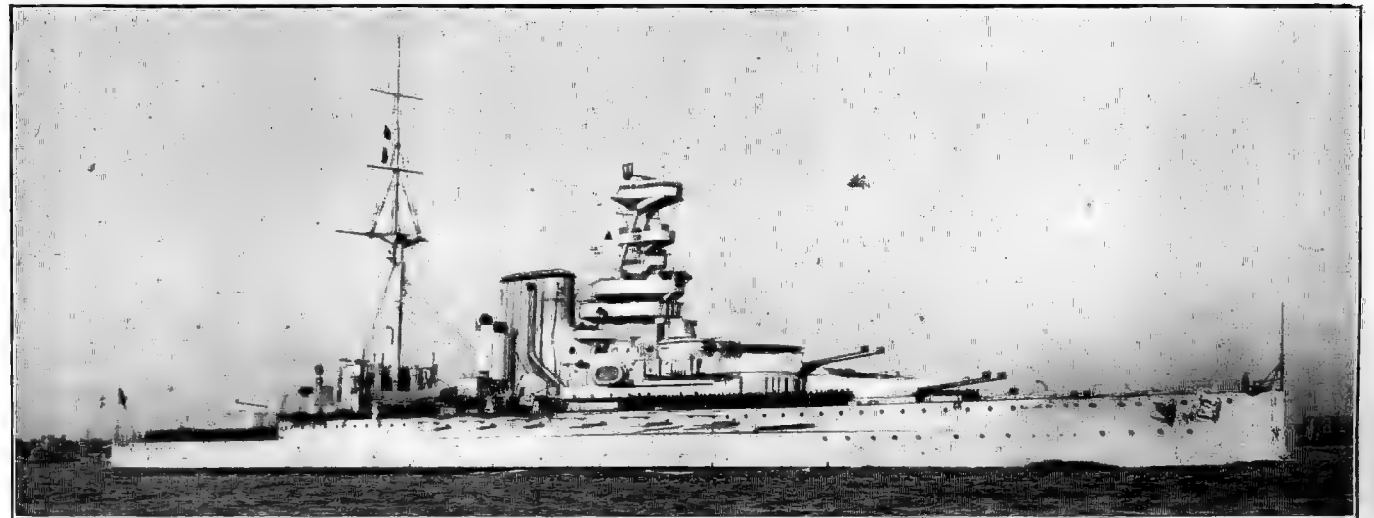
1926 Photo.

All Photos on this page by Cribb, Southsea.



WARSPITE. Details of control top, bridgework and funnel.

1926 Photo.



QUEEN ELIZABETH.

1928 Photo.

1912 BRITISH BATTLESHIPS.

(IRON DUKE CLASS.)—All fitted as Flagships.

BENBOW (12th Nov., 1913), **EMPEROR OF INDIA** (ex-Delhi, 27th Nov., 1913),

IRON DUKE (12th Oct., 1912), **MARLBOROUGH** (24th Nov., 1912).

Normal displacement, 25,000 tons. Full load, 28,800 tons. Complement, 1143 to 1161.

Length (o.a.), B. & I. D., 623 $\frac{3}{4}$; M., 623; E. of I., 622 $\frac{3}{4}$ feet. Beam, 90 feet. { Mean draught, 28 $\frac{1}{2}$ feet. } Length { (p.p.), 580 feet. }
{ Max. „ 32 $\frac{3}{4}$ „ } { (w.l.), 614 $\frac{1}{4}$ „ }

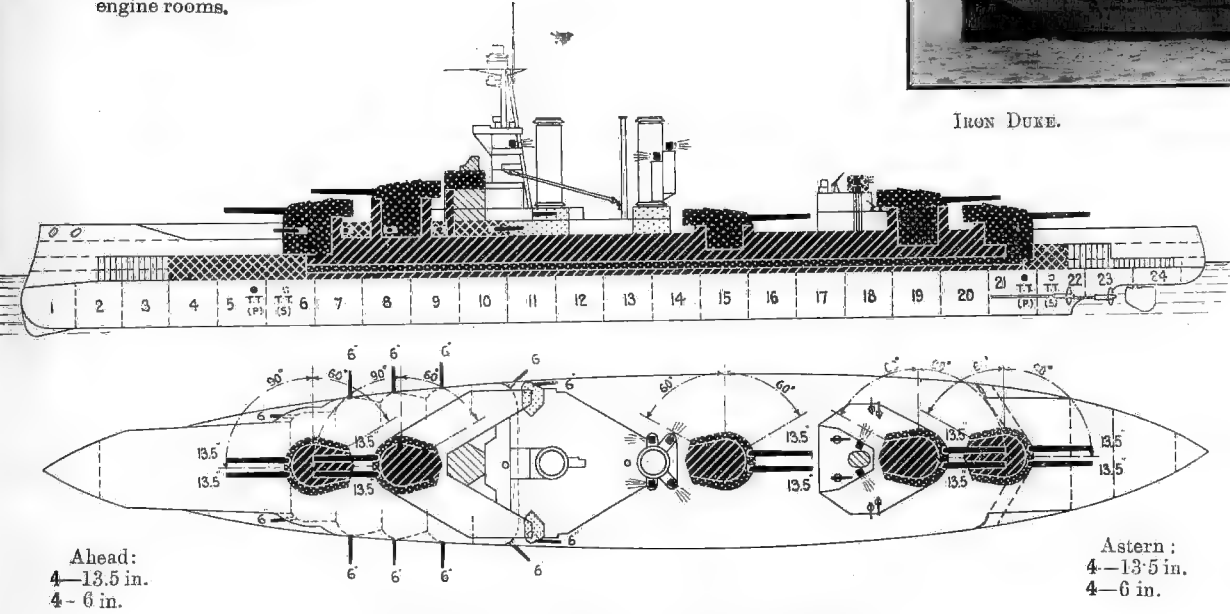
- Deck.
- Guns :
- 10—13.5 in. (Mk.V.) } Dir.
- 12—6 inch, 45 cal. (Mk. VII) } Con.
- 2—4 inch (anti-aircraft)
- 4—3 pdr.
- 1—12 pdr. Field
- 5 M.G.
- 10 Lewis
- Torpedo tubes (21 inch) .
- 4 submerged (broadside)
- Armour (H.T.) :
- 1" Fo'xle (over battery)
- 2"—1 $\frac{1}{2}$ " Upper
- 1" (amidships) } middle
- 2 $\frac{1}{2}$ "—1 $\frac{1}{2}$ " (aft) }
- 2 $\frac{1}{2}$ "—1" Lower
- Special Protection:
- 1 $\frac{1}{2}$ "—1" Torpedo Pro.
- Bulkheads abreast
- magazines, shell and
- engine rooms.

- Vertical.
- Armour (K.C.) :
- 12"-8" Lower
- 9" Middle } Side
- 8" Upper }
- 6"—4" (ends) }
- 8", 6", 4" Bulkheads
- (f. & a.)
- 6" Battery*
- 10"—7" Barbettes
- 11"—" Gunhouses
- 1 $\frac{1}{2}$ " Funnel uptakes
- 6"—3" C.T. base
- 11" C.T. (4"—3" hood)
- 6" Fore com. tube
- 6" Torpedo C.T.
- 4" After com. tube



IRON DUKE.

Photo added, 1927.



Ahead: 4—13.5 in.
4—6 in.

Astern: 4—13.5 in.
4—6 in.

Broadside: 10—13.5 in., 6—6 in., 2—21 in. tubes.

Machinery: Turbine (Parsons). Boilers: (see Notes). Designed H.P. 29,000 = 21 kts.
Coal: normal, 1000 tons; maximum, 3250 tons. Oil: normal, 1050 tons+550 tons in emergency
tanks=1600 tons max. Radius of action: about 7700 miles.

Gunnery Notes.—In these ships, 13.5's fire a specially heavy 1400 lb. projectile, which—owing to increased length—has to be brought up canted in hoists. 6 inch controlled from two director towers, P. and S. on forebridges. Originally had 2—6 inch in casemates at stern, but these were found utterly useless. Ports were sealed up and guns re-mounted on forecastle deck. Forward 6 inch battery used to be swamped out in head seas. Rubber sealing joints for gun-ports were designed and added at Scapa Flow.

Armour Notes.—Belt is 12" at w.l. only and 8" on lower edge. Barbettes, 6" and 3" as they descend through decks behind belt. Battery has 1" traverses and 4" bulkhead completely athwartships, just before fore funnel. Internal protection more complete than in *King George V* class, but, all the same, screens do not completely extend between end barbettes. At *Jutland*, *Marlborough* was torpedoed abreast boiler room, where there is no internal protection, but continued fighting in the battle line for some hours.

Engineering Notes.—213 r.p.m.=15 kts.; 303 r.p.m.=21 kts.

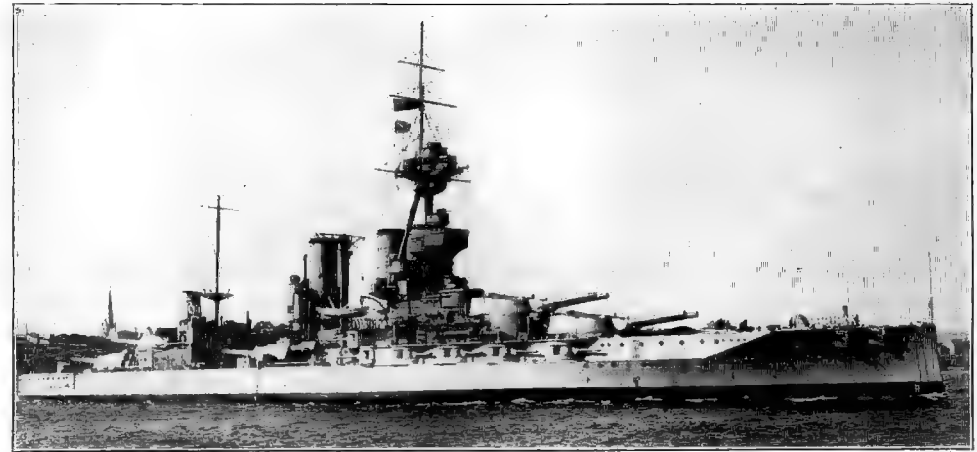
Name.	Builder.	Machinery.	Laid down.	Completed.	Trials. Full power.	Boilers.	Replacement due.
<i>Benbow</i>	Beardmore	Beardmore	May '12	Oct. '14	32530=21.5	13 Babcock	1934
<i>E. of India</i>	Vickers	Vickers	May '12	Nov. '14	29654=	Yarrow	
<i>Iron Duke</i>	Portsmouth Y	Laird	Jan. '12	Mar. '14	30040=21.6	18 Babcock	
<i>Marlborough</i>	Devonport Y	Hawthorn	Jan. '12	June '14	32013=21.6	Yarrow	

General Notes.—Begun under the 1911 Estimates. Derived from *Orion* class through *King George* type, the re-introduction of the 6 inch gun for the secondary armament being the most noteworthy feature—the increase in length and displacement resulting from this and the addition of two submerged T.T.'s aft. Average cost about £1,891,122. Annual upkeep, £145,500. *Emperor of India* was originally named *Delhi*. Recent refits: *Iron Duke* 1928-29, *Benbow* 1929. Mainmasts added 1920-21. 3 of these ships, composing the 3rd Battle Squadron, are used as seagoing training ships. The fourth, *Iron Duke*, is employed as sea-going gunnery firing ship.



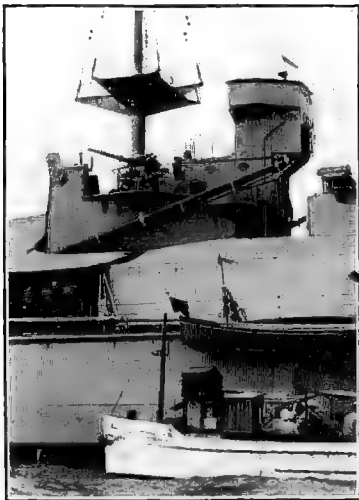
IRON DUKE.

1920 Photo, Abrahams, Devonport.

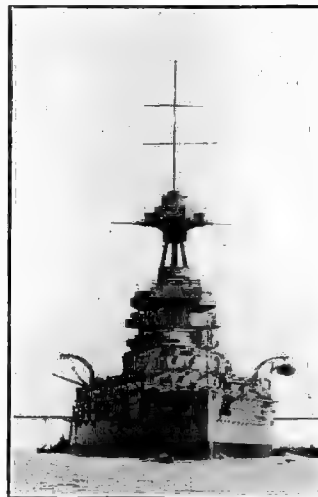


IRON DUKE.

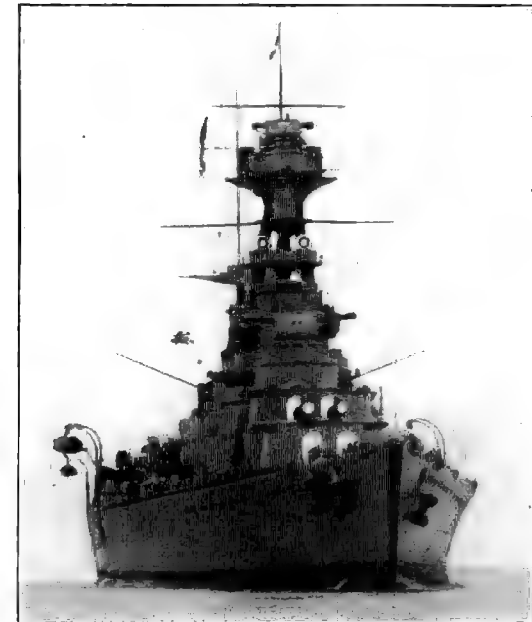
1920 Photo, Abrahams, Devonport.



MARLBOROUGH. 1927 Photo, R. Perkins, Esq.
(After shelter deck, showing alterations).



MARLBOROUGH (bow view). 1927 Photo, R. Perkins, Esq.



Hood (bow view). 1927 Photo, Abrahams, Devonport.

BRITISH—Battle Cruiser.

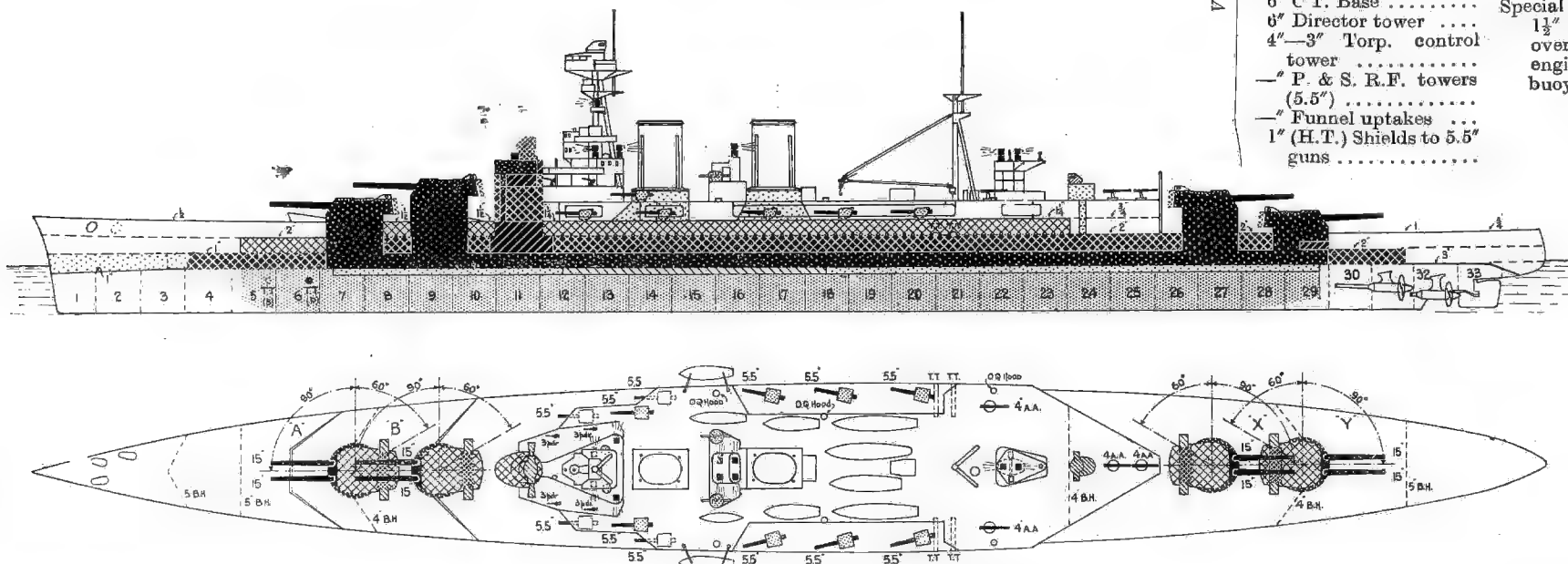
1916 BRITISH BATTLE CRUISER.

Guns:
 8—15 inch, 42 cal. } Dir. Con.
 12—5.5 inch, 50 cal.
 4—4 inch (anti-aircraft).
 4—3 pdr.
 1—12 pdr. Field.
 5 M.G.
 10 Lewis.
 Torpedo tubes (21 inch)
 2 submerged (P. & S.)
 4 above water in pairs.

HOOD* (J. Brown & Co., Clydebank. Begun 1st Sept., 1916, Launched 22nd August, 1918, completed 5th March, 1920.)

Normal displacement, 41,200 tons (15,200 tons full load). Complement 1341.
 Length { p.p. 810 ft. } Beam { w.l. } Draught { mean 28½ ft.
 { o.a. 860 ft. 7 in. } { outside bulges 105 ft. 2½ in. } { max. 31½ ft.
 *Fitted as Flagship.

Notes to Plan.—Combined thicknesses of side armour and conning tower shown by dark patch in section 11. Now carries flagstaffs on both masts, with gaff on main.



Armour (K.C.):
 3" Side (submerged) ..
 12", 7", 5" Side (amidships) ..
 6"—5" Side (forward) ..
 6" Side (aft) ..
 5" 4" Bulk'ds (f. & a.)
 12"—" Barbettes ..
 15" Face
 12"—11" Sides } Turrets
 12" & 9" C.T.
 6" C.T. Base ..
 6" Director tower
 4"—3" Torp. control tower ..
 —" P. & S. R.F. towers (5.5") ..
 —" Funnel uptakes ..
 1" (H.T.) Shields to 5.5" guns ..
 Decks:
 2" Forecastle
 1" U.D. amidships
 1½"—3" Main deck ...
 3" M.D. over magazines
 1½"—1" L.D. forward
 3"—1" L.D. aft
 Crowns:
 3" Director tower
 5" C.T.
 3" Torpedo control T.
 5" Turrets
 Special protection (H.T.):
 1½" and ¾" Torp. pro. b'lk'd over magazines, boiler and engine rooms, bulges and buoyancy spaces.

Ahead:
 4—15 in.
 6—5.5 in.

Astern:
 4—15 in.

Broadside: 8—15 in., 6—5.5 in., 3—21 in. tubes.

Machinery (by Builders): Brown-Curtis (geared) turbines. 4 screws. Boilers: 24 Yarrow (small tube). Designed S.H.P. 144,000 = 31 kts. Fuel: Oil only. 1200 tons normal, 4,000 tons maximum.

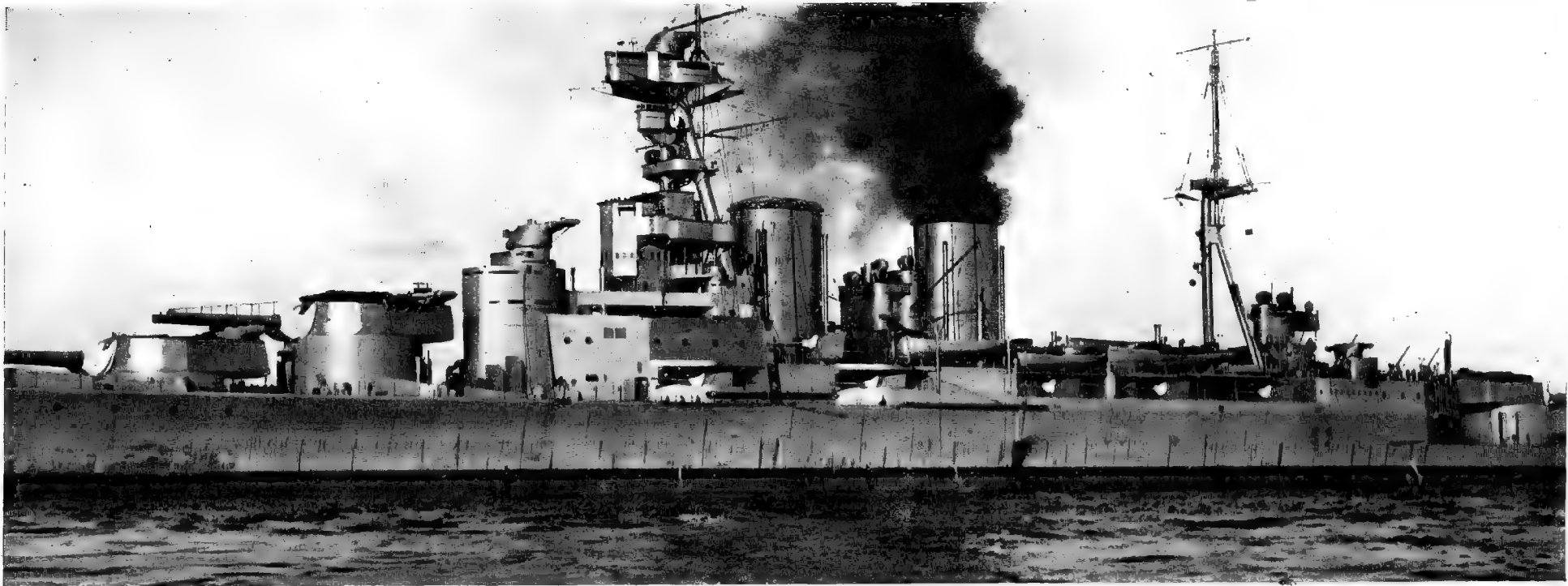
Gunnery Notes.—Barbette heights over l.w.l.: A, 32 ft.; B, 42 ft.; X, 31½ ft.; Y 21½ ft. All turrets bear 150° on each beam. Designed to mount 16—5.5 inch, but the four after guns were removed before completion. Elevation of 15 inch guns, 30°. 8—36 inch controlled, and 4—24 inch signalling S.L. Stem attachment for P.V.s of new design. Guns, mountings, barbettes and ammunition = 5300 tons.

Armour Notes.—Vertical side armour is backed by strong 2"—1" H.T. plating, not included in thicknesses given. Area of 12" armour at w.l., 562 ft. long by 9½ ft. deep. Gun houses, new type with flat crowns, small square sighting ports cut low in face for laying over open sights. On roofs, armoured cases slightly wider than R.F. to allow R.F. to be traversed for fine adjustments. Barbettes, 6"—5" as they descend through decks. C.T. is an enormous, elaborate, most expensive and ponderous structure: in upper stages, it consists of two shells, 12" outer, 9" inner, with narrow passage between. The slope inboard of hull side detracts from effects of plunging fire by virtual increase of armour thickness. A perpendicular, dropped from top sides, just meets outer edges of bulges, which are of the improved "D'Eyncourt-Hopkinson" type. Total weight of armour and protection, 13,800 tons.

Engineering Notes.—During world cruise, economical speed worked out at 288 miles in 24 hours on 180 tons of oil. Trials (unofficial figures).—At 42,200 tons, 151,000 S.H.P. = 32.07 kts. (run in bad weather, wind force 6 Beaufort scale) on Arran mile. At 44,600 tons, 31.89 kts. mean attained. On ½ power, 25 kts. easily secured. Total weight of machinery (with water in boilers to working level) = 5350 tons.

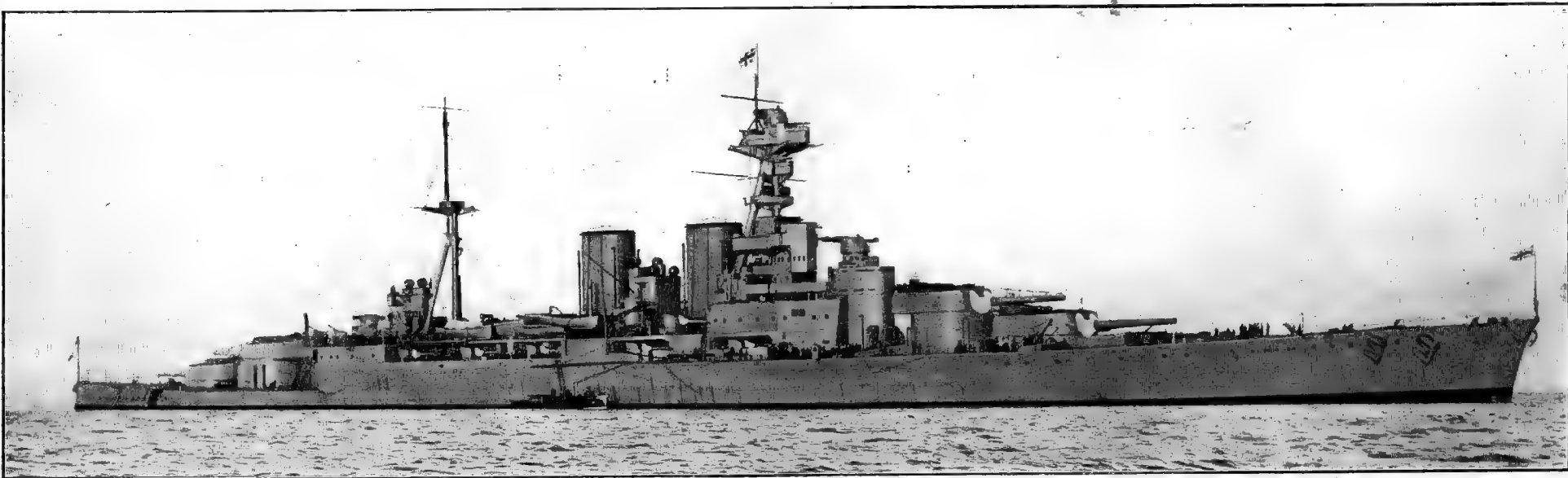
Notes on Original Design.—The original 1915 Design embodied same length and beam, but draughts were 25½ feet normal = 36,300 tons, and 29 feet deep. Speed: 32 kts. Belt 8", barbets 9", much thinner deck armour, and only 2—21 inch submerged T. T. Four ships ordered to this design April, 1916. In the design produced after Jutland (not approved till 1917), 5,000 tons extra protection was worked in. By use of small-tube boilers, 24,000 S.H.P. gained on same machinery weights as for *Renown* class.

General Notes.—Begun under Emergency War Programme. Originally, there were four ships in this class, *Anson*, *Hood*, *Howe*, *Rodney*. They were begun in the autumn of 1916, to meet the German Battle Cruisers, *Graf Spee*, *Mackensen*, *Ersatz Freya* and *Ersatz "A"* which were laid down in 1916. Contractors were: *Anson* (Armstrong), *Howe* (Cammell Laird), *Rodney* (Fairfield), *Hood* (Brown). The enemy having ceased work on all his large ships, in 1917, *Anson*, *Howe* and *Rodney* were stopped in March, 1917, and dismantled to clear slips after the Armistice, but not before £360,000 had been expended on them. These ships were redesigned to meet the lessons of Jutland. In *Hood*, the outstanding feature is the huge areas covered by heavy armour, strong framing, &c.—in fact, the general scheme of protection is most comprehensive. Cost, about £6,025,000 = £145 per ton. Annual upkeep, £427,270. Due for replacement, 1941. Under refit, 1929.



Hood. (Amidships detail view).

1920 Photo, Abrahams, Devonport.



Hood.

1925 Photo, Abrahams, Weymouth.

1915 BRITISH BATTLE CRUISERS.

(RENOWN CLASS.)

REPULSE (8th January, 1916), RENOWN (4th March, 1916).

Normal displacement, 26,500 tons (36,800—37,400 full load). Complement, 1181/1205.

Length { (p.p.), 750 feet. } o.a. 794 feet 2 1/4 in. Repulse { Renown — feet (mean), 31 1/2 feet (max.) }
(w.l.) 787 1/2 feet. } o.a. 794 feet 1 1/2 in. Renown { Renown 26 1/2 feet (mean), 30 1/4 feet (max.) }

Both fitted as flagships. †Outside bulges.

(See Armour Notes.)

- Guns :
6—15 inch, 42 cal. } Dir.
15—4 inch, 40 cal. } Con.
4—4 inch AA.
4—3 pdr.
1—12 pdr. Field
5 M.G.
10 Lewis
Torpedo tubes (21 inch) : *
2 submerged (both ships)
8 above water in pairs (Repulse)
*See Torpedo Notes.

For illustrations, vide following page.

Notes to plan :

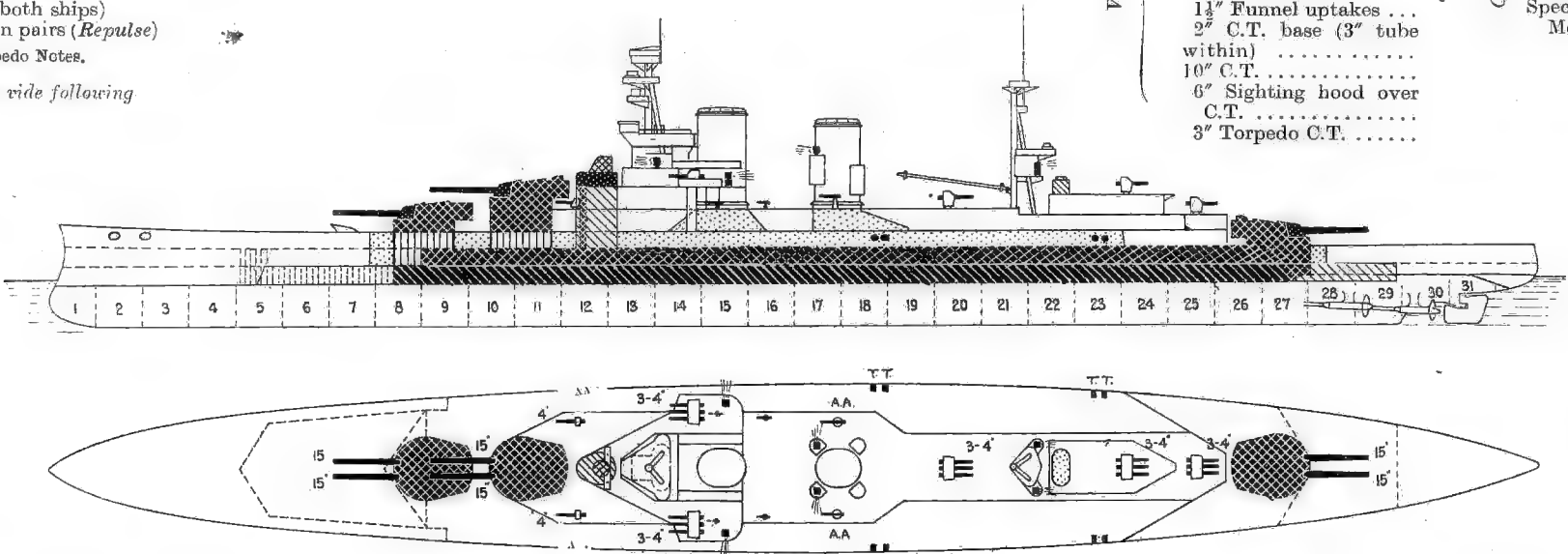
Now have range-finders mounted on turrets and additional control top at foremast head.
Renown is without main deck 6" side armour.

Armour (K.C.) :

- 9"—6" Side (amidships)
6"—4" Side (within bow)
3" (stern)
4" Fore b'lkhead
3" After b'lkh'd
1 1/2" Upper belt
7"—4" Barbettes
11"—7" Gunhouses
1 1/2" Funnel uptakes
2" C.T. base (3" tube within)
10" C.T.
6" Sighting hood over C.T.
3" Torpedo C.T.

Armour (H.T.) :

- 1 1/2"—1 1/4" Fo'xle
1 1/2"—1 1/4" Upper
3"—3" Main (2" slopes)
2 1/2" Bow
3 1/2"—3" Stern
— Barbettes
3" C.T. and hood
1 1/2" Torpedo C.T.
Special protection :
Modified bulges



Broadside : 6—15 in., 13—4 in., 4—21 in. tubes.

Machinery : Brown-Curtis (direct drive) turbines. 4 screws. Boilers : 42 Babcock & Wilcox. Designed H.P. not exactly specified, but expected to be 110,000 to 120,000 S.H.P. for 30 kts. In service, S.H.P. 112,000 = about 31.5 kts. Fuel (oil only) : 1000 tons normal ; Repulse 4243 tons maximum ; Renown 4289 tons maximum. Radius of action, about 3650 miles. Tactical diameter : 4 1/2 times length.

Gunnery Notes.—15-inch have range only limited by maximum visibility and Director tower is under control tower on foremast. 4 inch triples have 2 director towers, and all guns can be worked from either tower or half the 4-inch from one tower. If towers are destroyed, 4-inch can work independently. 4-inch triples are clumsy and not liked. They are not mounted in one sleeve ; have separate breech mechanism : gun crew of 23 to each triple. It is said that first salvo fired by forward 15-inch of Renown did considerable damage forward, and she had to be docked for repairs.

Torpedo Notes.—Repulse, on 1919 re-fit, had 8 above water tubes in 4 twin mountings fitted on main deck above sections 19 and 23.

Armour Notes.—Armouring adapted from Invincible and Indefatigable classes. On re-fit 1919-20, Repulse re-armoured on w.l. with 9" K.C. and 6" K.C. between main and upper decks, extending over sections 8-27 on plans. Belt, about 9 ft. deep.

Engineering Notes.—Turbines similar to Tiger. For full description, v. "Engineering," April 11th, 1919. Boilers : 250 lbs. per sq. in. Heating surface : 157,206 sq. ft. Consumption at full speed : about 1400 tons oil fuel per day ; at economical speed, about 180 tons per day.

Name	Builder	Machinery	Begun*	Completed	Trials : H.P. kts.	Replacement due.
Repulse	Clydebank	Clydebank	Jan.25,'15	Aug.,1916	119,025=31.7*	1939
Renown	Fairfield	Fairfield	Jan.25,'15	Sept.,1916	126,300=32.68	1940

*To Battle Cruiser design. *30 kts. on Arran mile after being re-armoured.

General Notes.—Provided for by 1914-15 Navy Estimates ; first designed as slightly modified Royal Sovereigns, contracted for on that basis, and begun 1914, but building was not pushed on actively after the outbreak of War. After the Falklands Battle it was decided that these two ships should be re-designed as Battle Cruisers. Outline design was prepared in ten days, and builders received sufficient details by January 21st, 1915, to begin building, but full designs were not finished and approved till April, 1915. Intended that they should be completely built in fifteen months, but this time was somewhat exceeded. Both ships have turned out remarkably well and reflect great credit on their designers and builders. Internally, they are most spacious, but it has been stated that their guns "shake them up" considerably. Costs : Repulse, £2,627,401 ; Renown, £3,111,266 ; but former total is not inclusive of all charges, and is liable to revision. Relits : Renown (1919-20), £100,738, (1921-22) £175,518. Repulse (1918-22), £860,684 ; which is equivalent to the cost of a new Carlisle type Light Cruiser. Renown re-constructed, 1923-26, with addition of conspicuous bulge ; bridge built up abaft fore tripod, as in Revenge ; heavy upper control top on foremast and short topmast removed ; gaff on main at heel of topmast.

1915 BATTLE CRUISER.

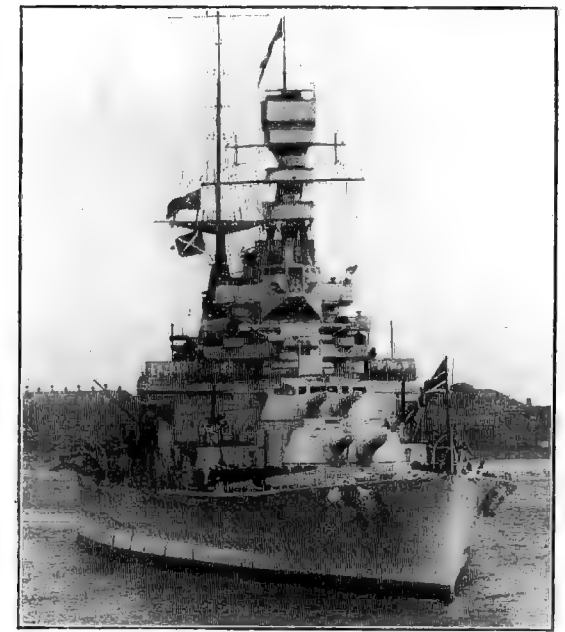
Battle Cruiser—BRITISH

(All Photos on this page, by Stephen Cribb, Southsea.)



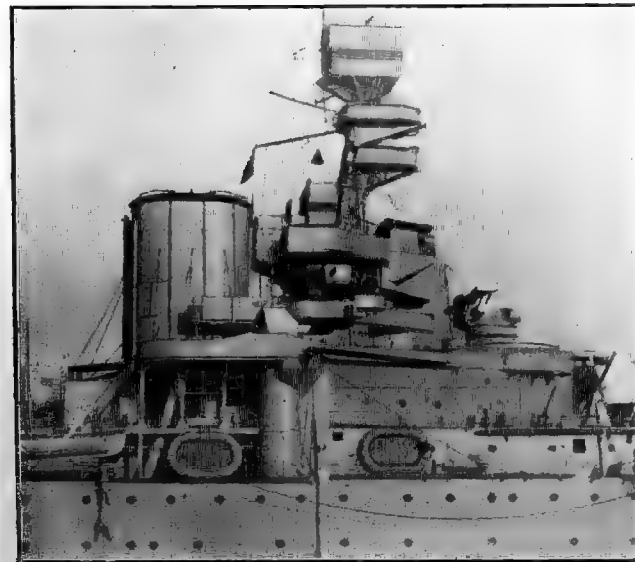
RENOWN.

1926 Photo.



RENOWN (bow view.)

1927 Photo.



RENOWN.

1927 Photo.



RENOWN.

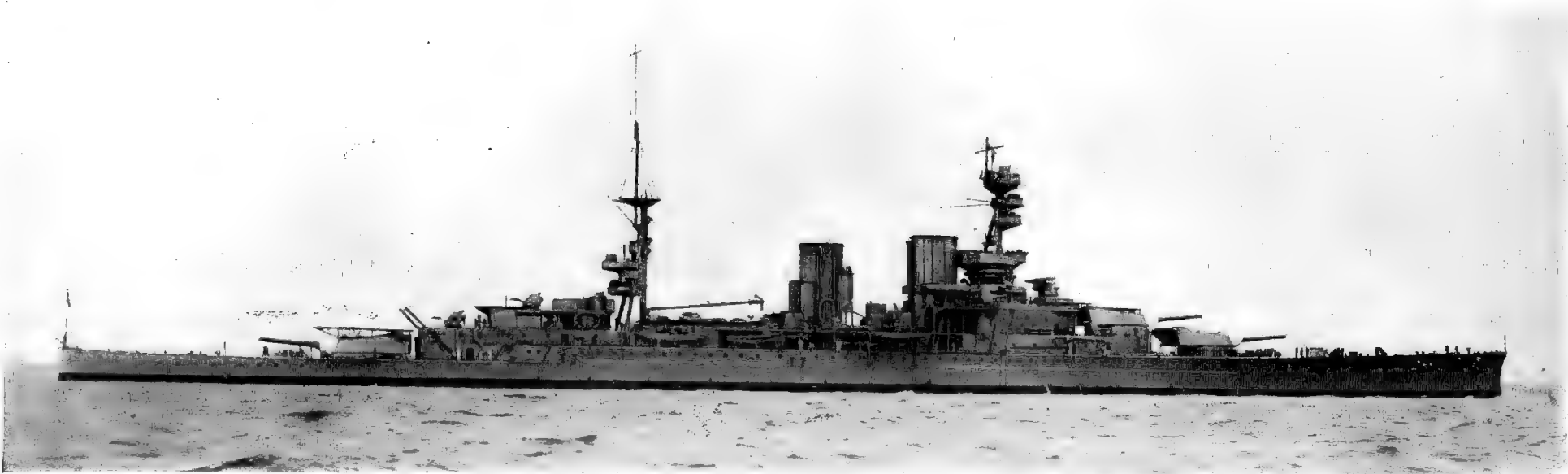
1926 Photo.

1915 BRITISH BATTLE CRUISER (Illustrations.)
(Described on an earlier page.)



REPULSE.

1925 Photo, Abrahams, Weymouth.



REPULSE.

1922 Photo, Gieves, Ltd

1912 BRITISH BATTLE CRUISER.

Battle Cruiser—BRITISH

TIGER* (Begun 20th June, 1912, Launched 15th December, 1913, Completed October, 1914).

Normal displacement, 28,500 tons. Full load, about 35,000 tons. Complement 1434.

Length (*waterline*), 698 feet. Beam, 90½ feet.

	{	Mean draught,	28½ feet.	{ Length (<i>o.a.</i>)	704 feet.
	{	Max. "	34 "	{ Length (<i>p.p.</i>)	660 feet.

° Fitted as Flagship.

^aFitted as Flagship.

Guns :
 8—13.5 inch (Mk. VI) } **Dir.**
 12—6 inch (Mk. VII) } **Con.**
 4—4 inch (anti-aircraft).
 4—3 pdr.
 1—12 pdr. Field.
 5 M.G.
 10 Lewis.

Torpedo tubes (21 inch):
4 submerged (broadside).

Armour (K.C.):

Vertical.	9"	} Side amidships
	6"	
	3"	Under side amidships
	5", 4', 3'	sides (ends) ..
	4"	Bulkheads ..
	6"	Battery (1" traverses)
	5", 4"	Battery Bulk'ds)
	6"	Casemates (2" rear)
	9"—8"	Barbettes
	9"	Gunhouses
	2"	C.T. base
	6"	Com. tube
10"	C.T.	
6"—3"	hood over C.T.	
6"	Torpedo C.T. (4" tube) ..	

Armour (H.T.) :

Deck.	{	1½"—1" Fo' xls	
		1½"—1" Upper	
		1" Main	
		1" Amidships	} Lower	
		1" fwd. & aft.		
		3" Bow		
		Special protection:		
2½"—1" H.T. Torp. Pro.				
B'h'ds abreast mags				

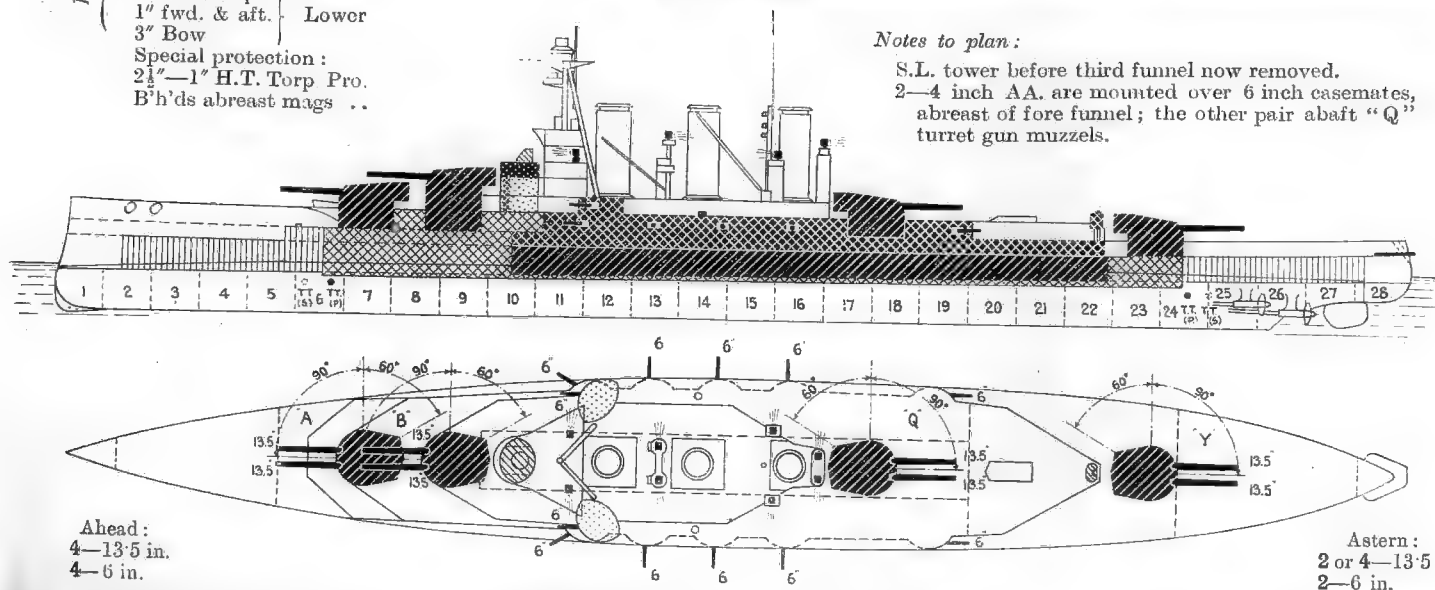


1921 Photo, Seward, Weymouth.

Notes to plan:

S.L. tower before third funnel now removed.

2—4 inch A.A. are mounted over 6 inch casemates, abreast of fore funnel; the other pair abaft "Q" turret gun muzzels.



Broadside: 8—13·5 in., 6—6 in., 2—21 in. tubes.

Astern :
2 or 4—13·5 in.
2—6 in.

Machinery: Turbines (Brown-Curtis direct drive). 4 screws. Boilers: 39 Babcock. Designed H.P. 85,000=28 kts. Overload, 108,000=30 kts. Coal: *normal* 1000 tons, *maximum* 2800 tons coal and 3480 tons oil fuel. Total fuel carried not to exceed 4900 tons. Trials: 104,635 H.P.=29 kts. 87,500=28 kts. Completion after outbreak of war prevented complete trials being made as usual in peace.

Armour Notes.—Armour much as *Lion* Class, but 6" battery and extra H.T. decks added. Barbettes 4" 3" 1", as they descend through decks behind belts. $\frac{3}{4}$ " rear screen to 6" battery. Internal magazine protection is not continuous between barbettes.

Engineering Notes.—4-shaft turbines in 2 sets, each set has H.P. ahead and H.P. astern turbine on wing shaft, one L.P. ahead and one L.P. astern, in same casing on inner shaft. Boilers in 5 rooms. The enormous fuel capacity (6280 tons coal and oil) does not give this ship any exceptional radius of action, for she burns about 1200 tons of fuel per day at 60,000 S.H.P.

General Notes.—Built under 1911 Estimates by J. Brown & Co., Clydebank. Completed October, 1914. Cost, £2,687,491. Refit, 1920, £90,636. Annual upkeep, £183,680. Fore topmast struck in 1918, to accommodate mast head range-finder, and topmast added to derrick mast, greatly altering her profile. Extensive refit 1922-23, at Rosyth. Due for replacement, 1935.

BRITISH—Aircraft Carrier.

BRITISH NAVY—AIRCRAFT CARRIER.

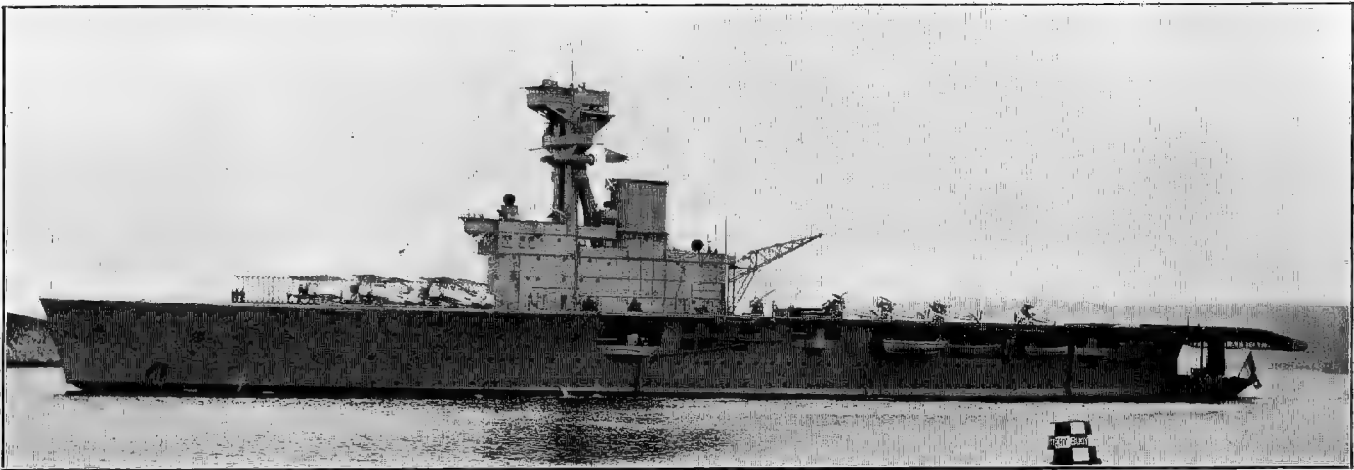
HERMES (11th September, 1919)

Displacement, 10,950 tons *normal*. Complement 664.

Length { *p.p.* 548 feet } Beam { *w.l.* } Draught { *mean* 18½ feet.
 { *o.a.* 598 „ } { outside bulges, 70 feet } { *max.* — „
 { over flight deck, 90 feet }

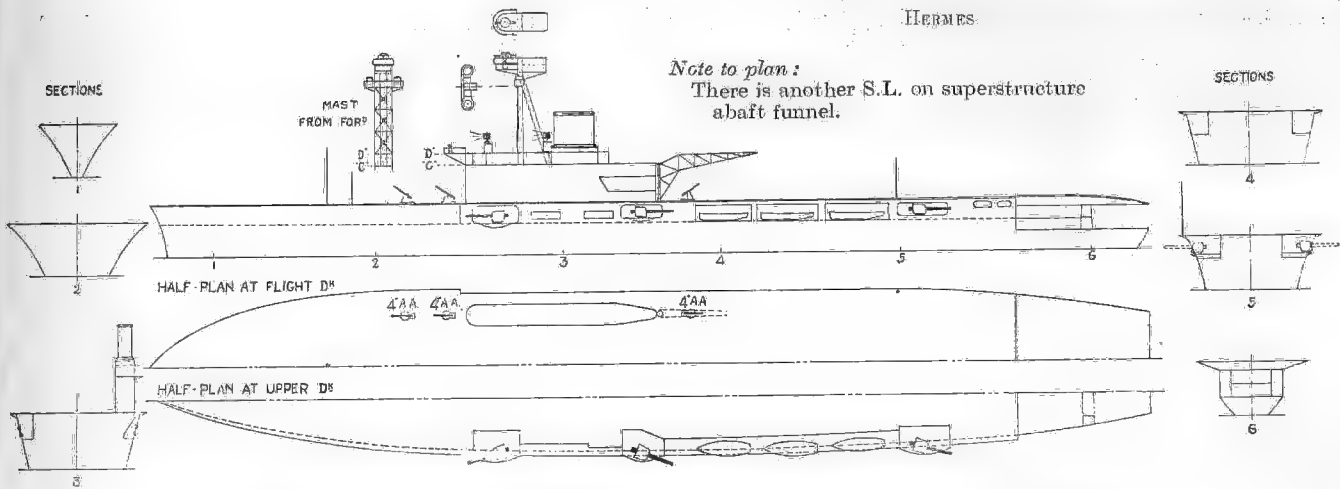
Guns:
6—5·5 inch, 50 cal. (Dir. Con.)
3—4 inch AA.
4—3 pdr. AA.
Flights carried:
1 Fighter (9 Flycatchers in all).
2 Spotter Reconnaissance (1 flight
Fairey III D, 1 flight Fairey III F).

Armour:
Not known—probably
of Light Cruiser
type.
Anti-Torp. Pro.
Bulges.



HERMES

1924 Photo, Abrahams, Devonport.



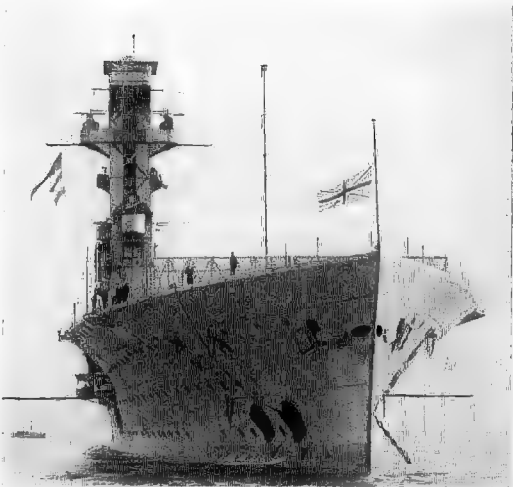
Machinery: Parsons (all geared) turbines. Designed S.H.P. 40,000=25 kts. 2 screws.
Boilers: Yarrow or Babcock. Fuel (oil only): 1000 tons *normal*. 2000 tons *max*.

Name	Builder	Machinery	Ordered.	Begun	Completed	Trials
Hermes	Armstrong Whitworth Devonport D.V.*	Parsons	July, '17	15 Jan., '18	1923	

* Towed here for completion, January, 1920.

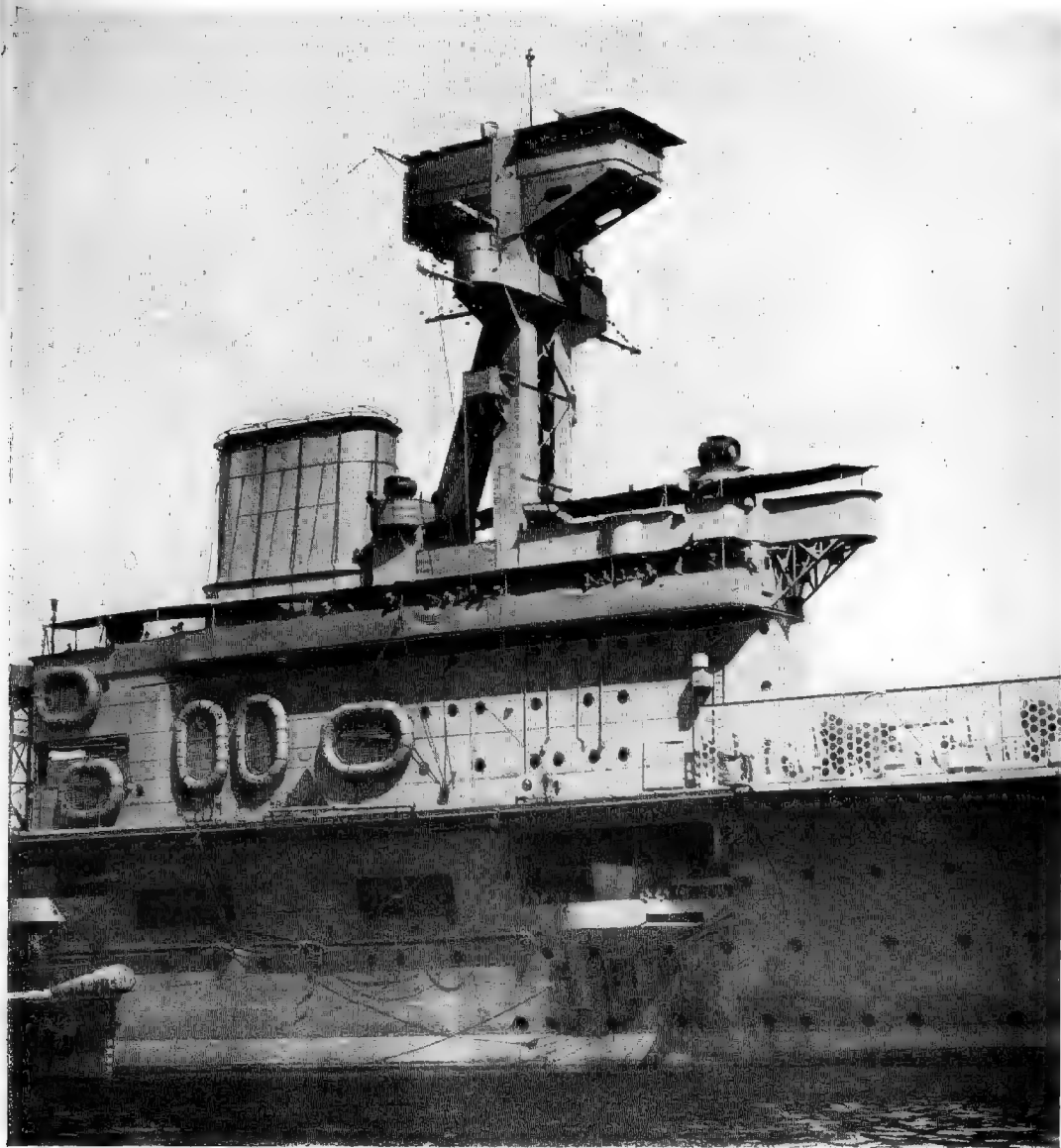
General Notes.—Begun under Emergency War Programme. First vessel specially designed by Admiralty as an Aircraft Carrier. Is a splendid sea boat, very steady, with remarkably little rolling propensity.

To carry 20 sea or aeroplanes. Special ventilation system to lessen danger of fire from petrol fumes, and new types of gear for handling, landing and flying-off aircraft. Hangar aft, with electric lift from quarterdeck to flight deck, planes being wheeled out from hangar on to lift through an opening normally closed by shutters. Transporter cranes fitted forward and aft.

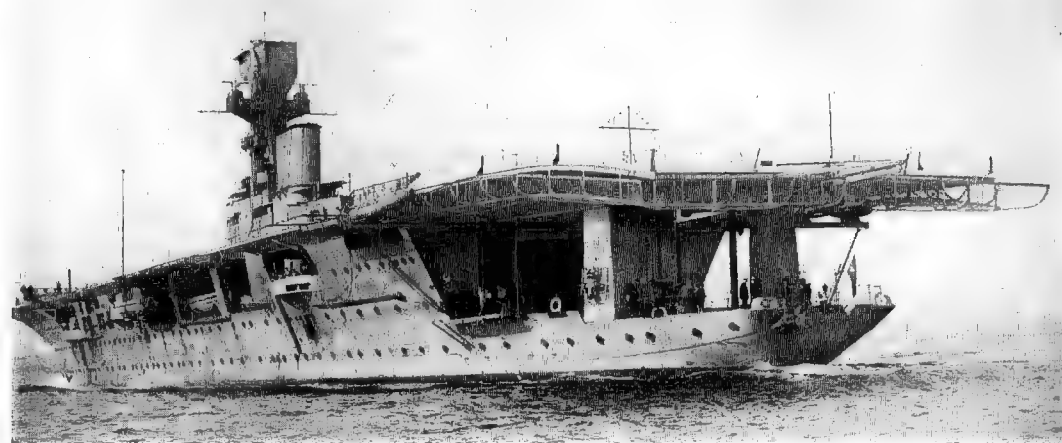


HERMES (bow view).

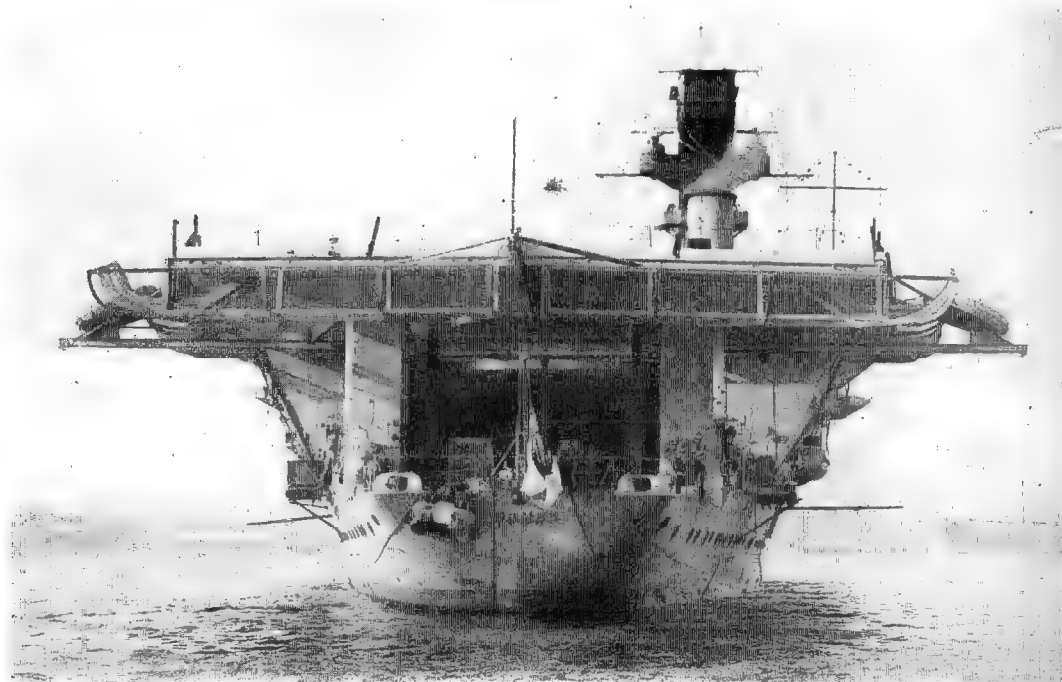
1923 Photo, Abrahams, Devonport.



HERMES (amidships, starboard side).



HERMES (port quarter).



HERMES.

All Photos, Abrahams, Devonport (1923).

EAGLE (8th June, 1918), late Battleship.

Normal displacement, 22,600 (*deep load*, 26,200) tons. Complement 748.

Length { (p.p.) 625 feet } Beam, { 92½ } feet.* Draught { 24 feet mean. }
 { (o.a.) 667 „ } { 105½ (max.) } { 27 feet max. }

* 100 feet, flight deck.

Guns:

9—6 inch, 50 cal. (Dir. Con.)

5—4 inch AA.

4—3 pdr. AA.

Flights carried:

1 Spotter Reconnaissance
 (Fairey III F).

1 Fighter (Flycatcher).

1 Torpedo (Dart).

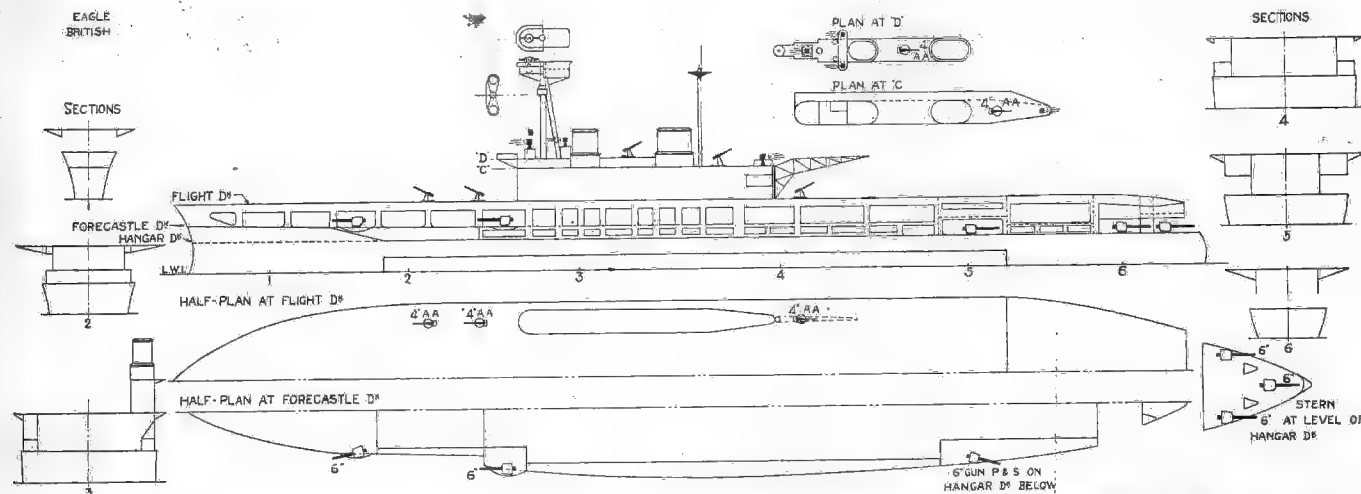
Armour:

... " Side (amidships).....

... " Deck

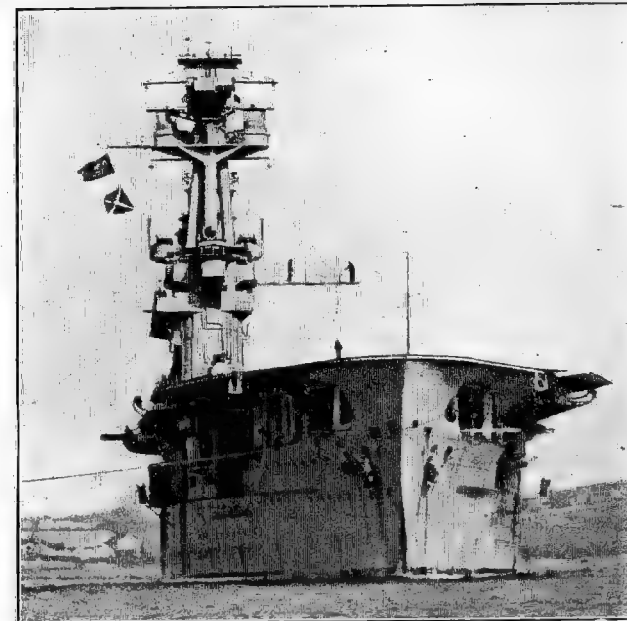
Special protection:

Bulges over about four-fifths of length, projecting about 6 feet from side.



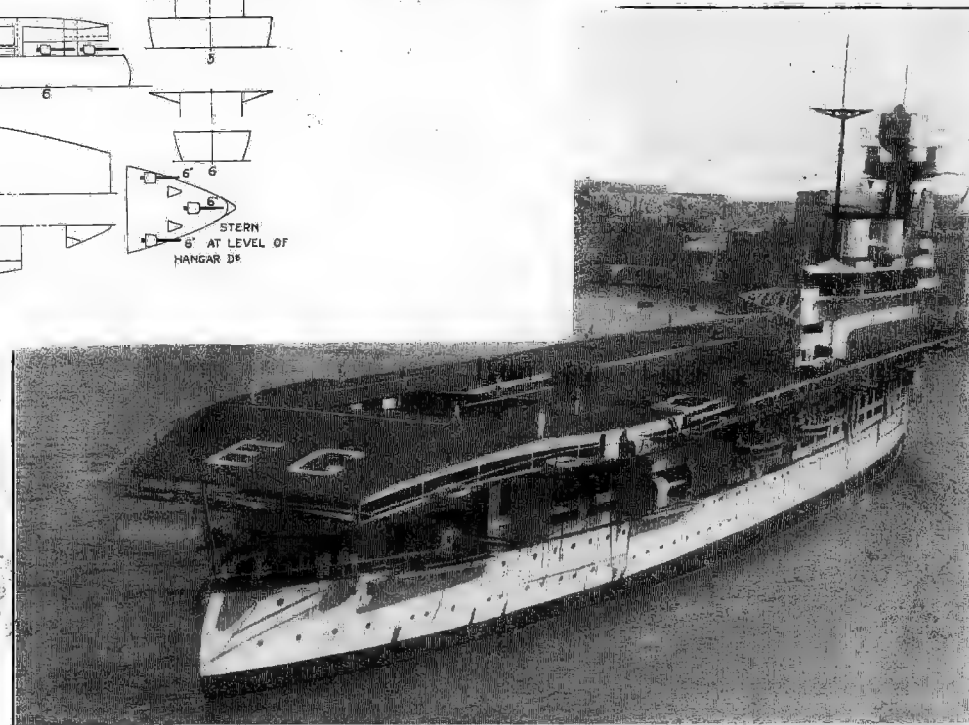
Machinery: Brown-Curtis (A.G.) turbines, by J. Brown & Co., Clydebank. Designed S.H.P. 50,000=24 kts. (No details available of trials). Boilers: 32 Yarrow small tube (oil burning). Fuel: *Normal*, 2500 tons; *maximum*, 3750 tons oil fuel.

General Notes.—Designed and begun by Armstrong Whitworth, February, 1913 for Chile, as *Almirante Cochrane*, a Dreadnought Battleship and sister to Chilean *Almirante Latorre*. All work on this ship ceased in August, 1914, and she lay on her slip until 1917, when her purchase was negotiated with the Chilean Government. Her design was modified to an Aircraft Carrier by Sir E. H. Tennyson d'Eyncourt. Commissioned for ship and flying trials with one funnel and no masts, 13th April, 1920. As a result of trials made off Scilly Islands, put in hand at H.M. Dockyard, Portsmouth, for modifications, November, 1920. Finally completed in 1923. Bought from Chile for £1,334,358, sums subsequently expended have raised total cost to £4,617,636 (Statement by First Lord, April 1927).



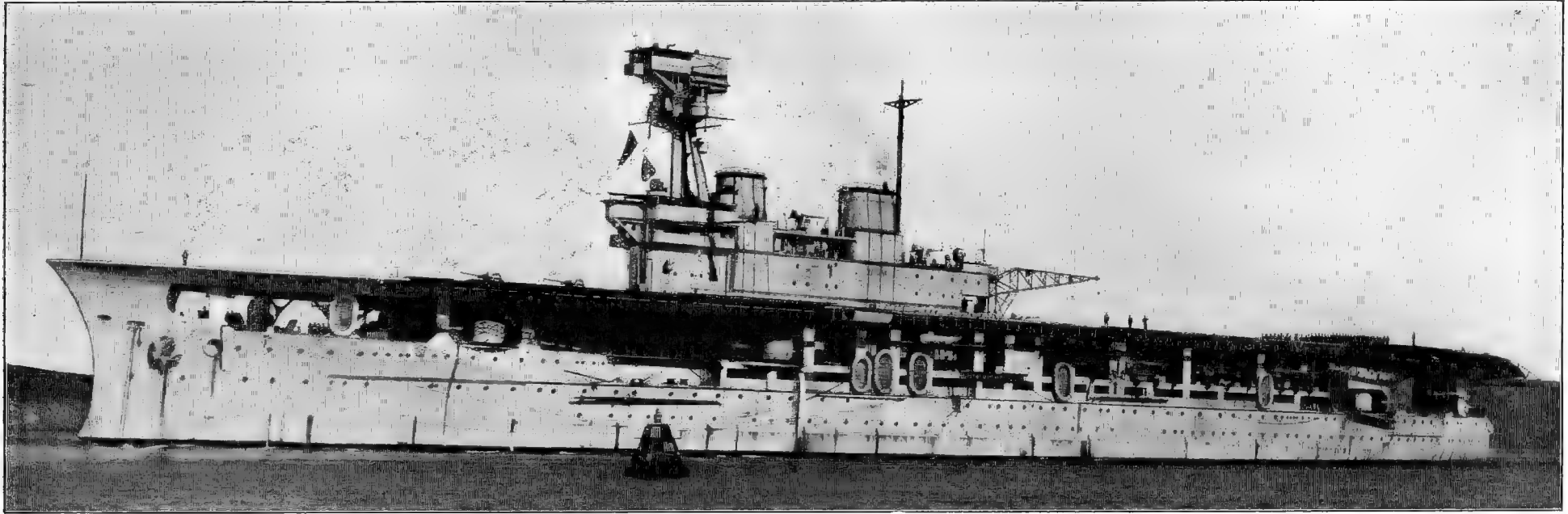
Bow view.

1924 Photo, Abrahams, Devonport.



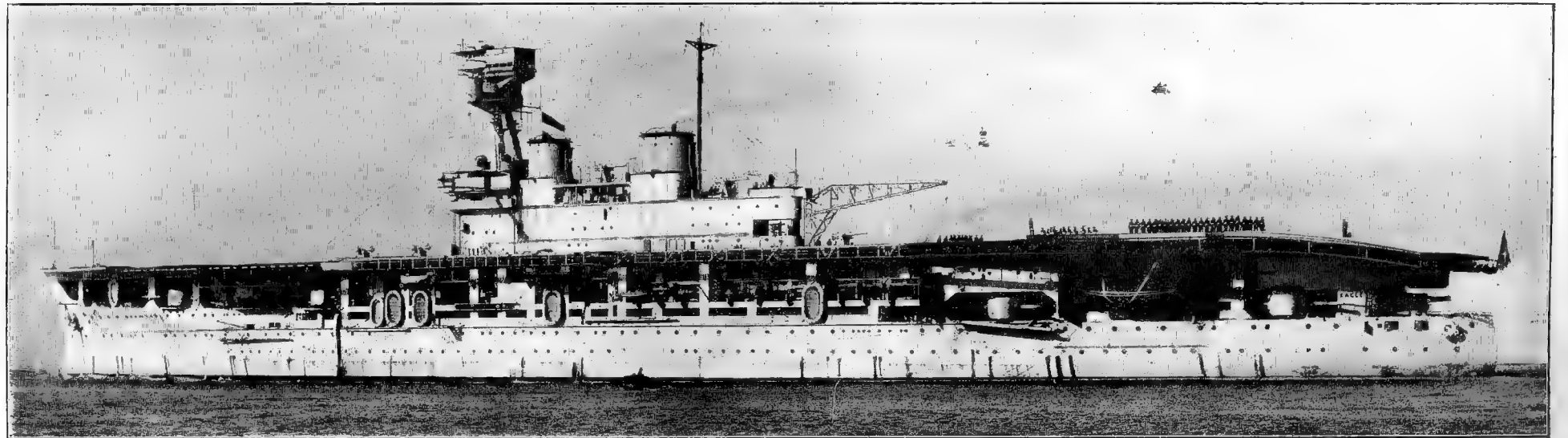
EAGLE.

1927 Photo, Cassar.



EAGLE.

1924 Photo, Abrahams, Devonport.



EAGLE.

1924 Photo, Abrahams, Devonport.

BRITISH—Aircraft Carrier.

ARGUS (2nd Dec., 1917). Late Liner.

Normal displacement, 14,450 tons. Complement, 373.

Length (p.p.), 535 feet (w.l.) 560 feet (o.a.) 565 feet.

Beam, 68 feet (excluding bulges).

Draught, 21 feet, mean.

Guns:

6—4 inch A.A.

4—3 pdr.

4 M.G.

10 Lewis.

Flights carried:

1 Fighter (Flycatcher).

2 Spotter Reconnaissance

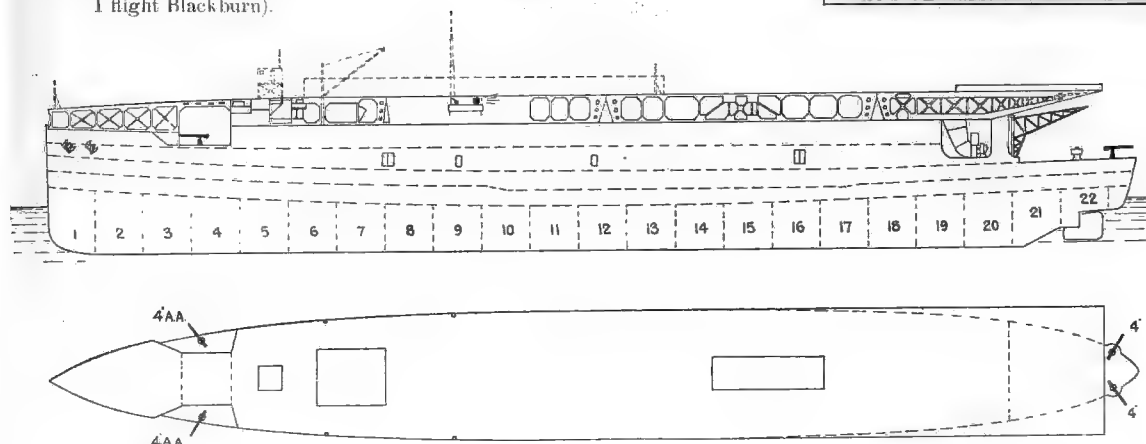
(1 flight Fairey III F,

1 flight Blackburn).

Armour:

Nil.

(Bulges—see General Notes.)



Machinery (by builders): Parsons turbines. 4 screws. Designed S.H.P. 20,000=20.2 kts. Can make 20.75 kts. for short periods, but 20 kts. is usually best speed under ordinary conditions. Boilers: 12 cylindrical (6 D.E. and 6 S.E.), with Howdens forced draught. Fuel: 2000 tons oil.

*Capacity, &c.—Hangar is 350 ft. long by 68 ft. wide (over all) and 48 ft. clear width, 20 ft. clear height. It is divided into four sections by fire-proof screens, and can accommodate 20 aeroplanes of sea and land types.

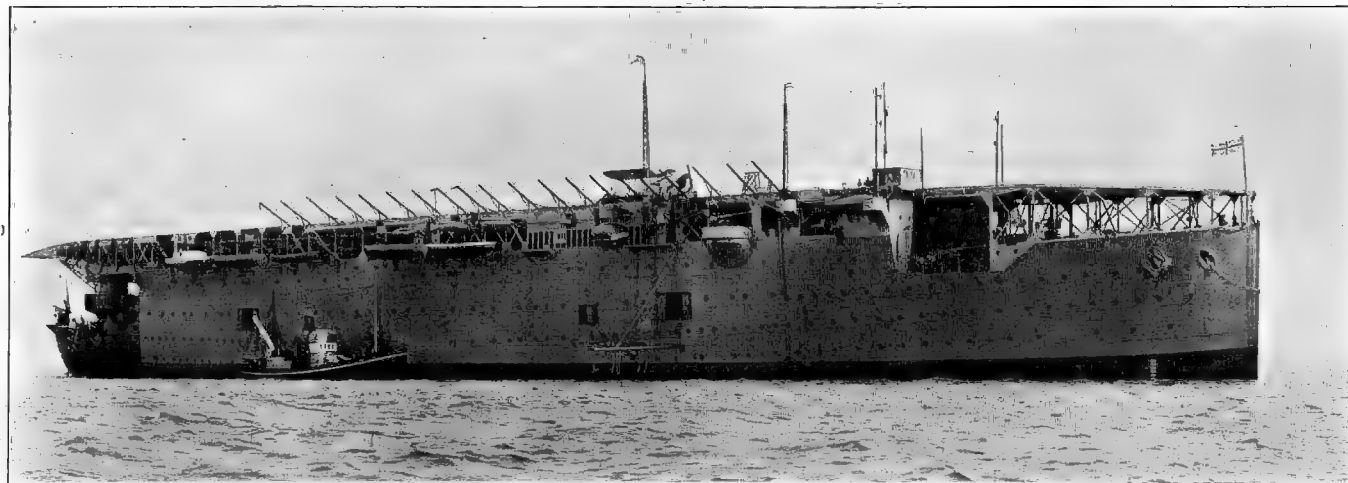
*Stores, &c.—Torpedoes are carried for torpedo-dropping aeroplanes; aero-bombs, spare parts wings, propellers, &c. Full equipment is carried for maintenance and repair of aircraft. There are large carpenters' and engineers' workshops, for executing rapid repairs.

*Handling Gear.—Two electrically controlled lifts for raising aircraft from hangar to flight deck. Forward lift, 30 ft. x 36 ft. After lift, 60 ft. x 18 ft. When forward lift is at flight deck level, two roller platforms slide to the sides and uncover well opening. When lift descends, the platforms are closed together and give a 20-ft. platform for flying off. When a deck load of aeroplanes is carried, wind-breaking pallsades can be raised simultaneously to 14 ft. above flying deck. Two derricks with electric winches amidships on flight deck and two electric cranes at stern on hangar deck level; all to pick up aeroplanes from the water.

*Landing.—Wind safety mattress (or landing net) fitted, laid horizontally fore and aft over well, extending approximately over sections 6—13 on plans above. Planes have "dog-leash" grabs on undercarriage, which grip net on landing, check speed, and prevent planes from being blown sideways, and carried over ship's side by wind, after they have lost flying speed. Steam jet indicators fitted for day use and special illumination for night landings. There is a wide safety "gutter" net all round flight deck.

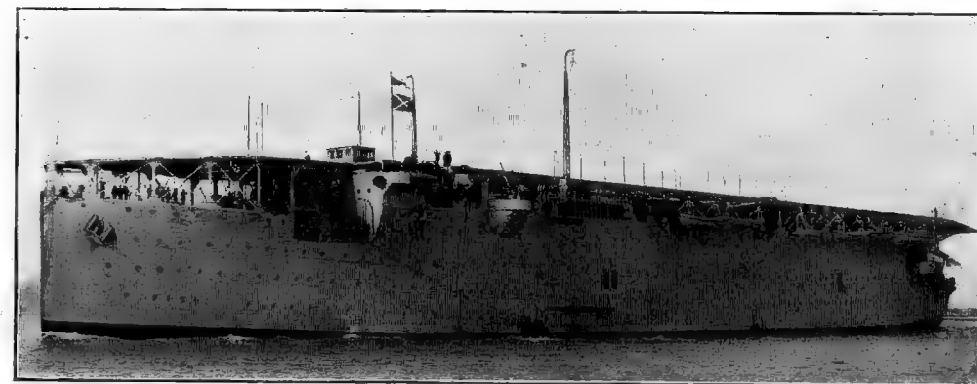
*For majority of details in these notes, we are indebted to "Engineering," which published a full description of H.M.S. Argus, in its issue of March 28th, 1919.

BRITISH NAVY—AIRCRAFT CARRIER.



ARGUS.

1929 Photo, R. Perkins, Esq.

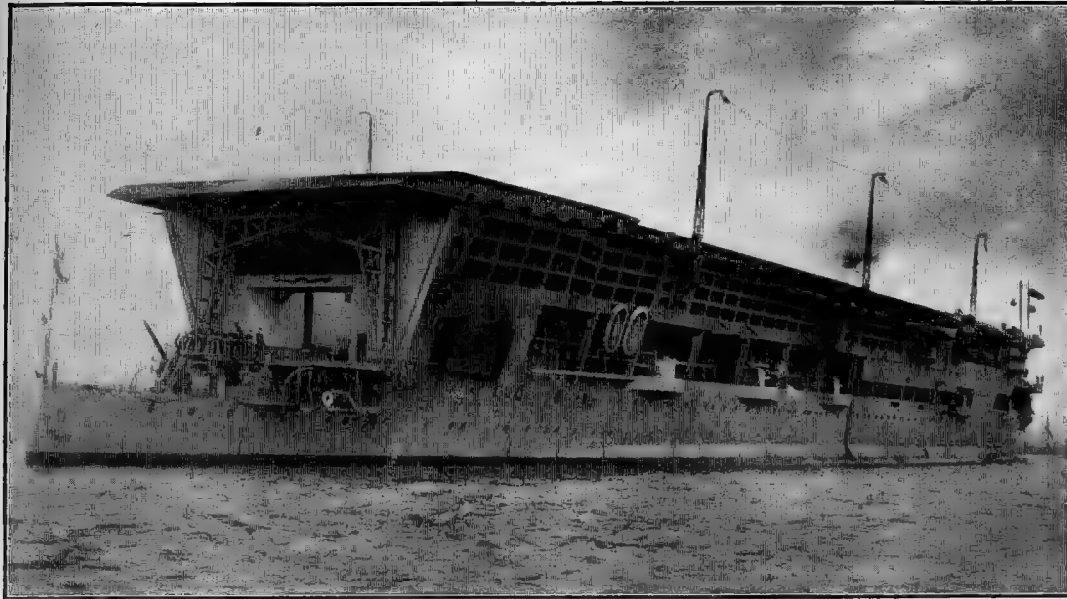


ARGUS.

1927 Photo, Cribb, Southsea.

*Engineering Notes.—At the time designs were got out, a 1/4-inch scale model was prepared for testing in the air tunnel at the National Physical Laboratory, Teddington, to solve various structural problems and to test eddy-making effects of hull. It was found that the emission of hot furnace gases from the usual type of funnels created such serious air disturbances, safe landings would be very difficult. Accordingly, horizontal smoke-ducts with big expelling fans were fitted, to deliver all furnace gases and smoke out abaft hangar, or alternatively through flight deck. Designed for 18 kts., but modifications during conversion raised speed by 2 kts. Mean H.P. on trial, 21,376 = 20.5 knots.

General Notes.—Begun 1914, by Beardmore, for Italian Lloyd Sabauda Line, as S.S. Conte Rosso. All work on her ceased in 1914. She was purchased in 1916 and converted to Aircraft Carrier. Completed September, 1918. Refitted 1925-26, and Bulges fitted, extending from Section 4 to Section 19.



FURIOUS. (Showing alterations to improve ventilation.)

1925 Photo, Abrahams, Devonport.

FURIOUS (15 August, 1916). Late Cruiser.

Normal Displacement, about 19,100 tons, (about 22,450 tons full load). Complement, 748. †
 Length, (p.p.) 735 feet, (o.a.) 786½ feet. *Beam, 89¾ feet. Draught, { mean 21½ feet.
 { max. 25 feet.

*Outside bulges.

Armour:

3" Belt (amidships).....
 2" Belt (bow).
 3"-2" Bulkheads F. & A.
 1" Decks (H.T. at stern).....
 3"-1½" Decks (H.T. at stern)....

Anti-Torp. Pro.

Shallow bulges
 1" H.T. vertical.

†With flying personnel added,
 complement is about 1100.

Guns (Dir. Con.):

10—5.5 inch, 50 cal.

6—4 inch AA.

4—3 pdr.

4 M.G.

10 Lewis.

Flights carried:

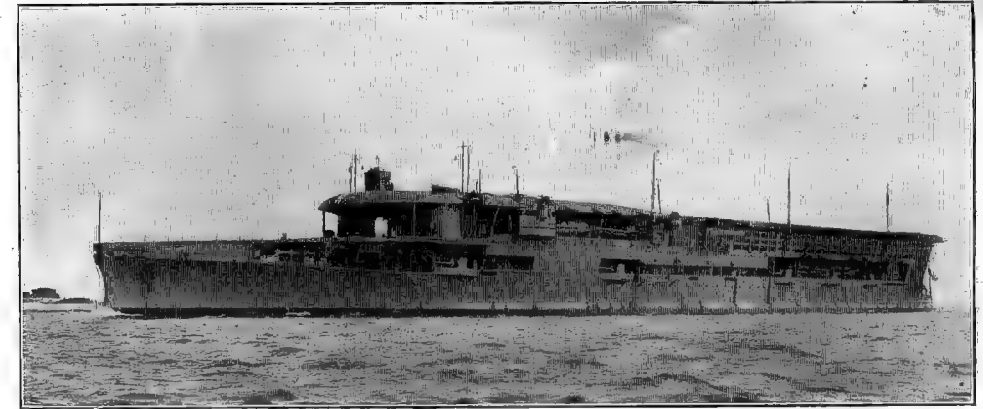
1 Fighter (Flycatcher).

3 Spotter Reconnaissance.

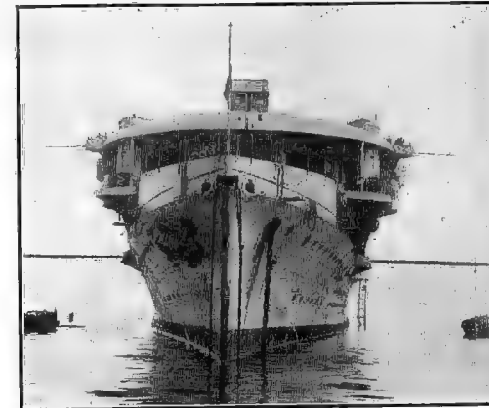
(2 flights Fairey III F,

1 flight Blackburn).

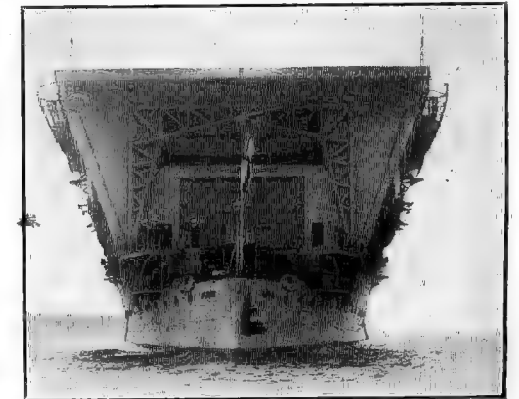
2 Torpedo (1 Dart, 1 Ripon II).



1926 Photo, Cribb, Southsea



1926 Photo, Cribb, Southsea.



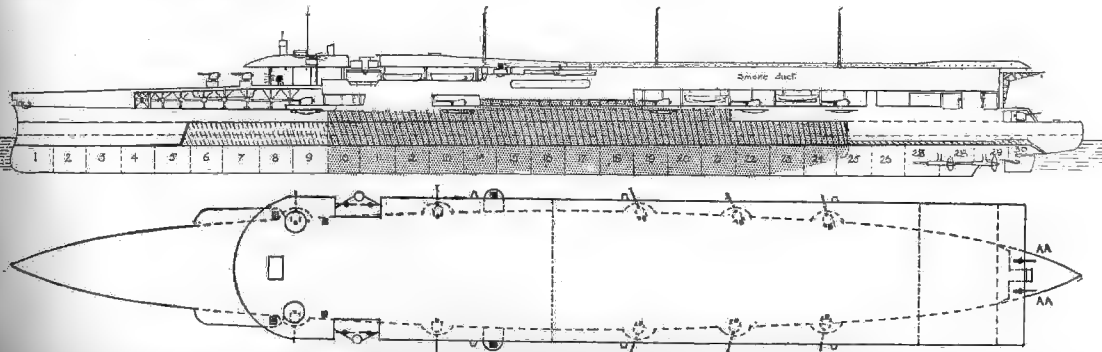
1926 Photo, Cribb, Southsea.

Machinery (by Wallsend Co.): Brown-Curtis (all geared) Turbines. 4 screws. Boilers: 18 Yarrow. Designed S.H.P. 90,000 = 31 kts. Trials: 90,820 = kts. Fuel (oil only): 4010 tons.

Armour Notes.—3" Belt consists of 2" plating over 1" shell plating, as in Light Cruisers.

General Notes.—Built under Emergency War Programme, by Armstrong Whitworth. Begun June, 1915; completed July, 1917; re-built November, 1917-March, 1918. Designed as a modified *Courageous* but altered to Aircraft Carrier. Since conversion, she is said to be rather light, and is good now for 32-33 kts. Including cost of alterations, this ship is said to have absorbed over six million pounds. Underwent re-fit and alteration at H.M. Dockyards, Rosyth and Devonport, 1921-25, after which her appearance was completely altered, the funnel and mast being removed and a new hangar built forward. Smoke is discharged from vents at after end of hangar, or alternatively through flight deck, which measures 700 x 80 feet. Height of flight deck from water line is 75 feet. There are 2 hydraulic lifts from hangars to flight deck.

Aircraft Notes.—From the deck of this ship, was launched the most successful Naval air raid of the late War, viz:—the bombing of the German Airship sheds at Tondern, Schleswig-Holstein. †



BRITISH NAVY—AIRCRAFT CARRIERS.

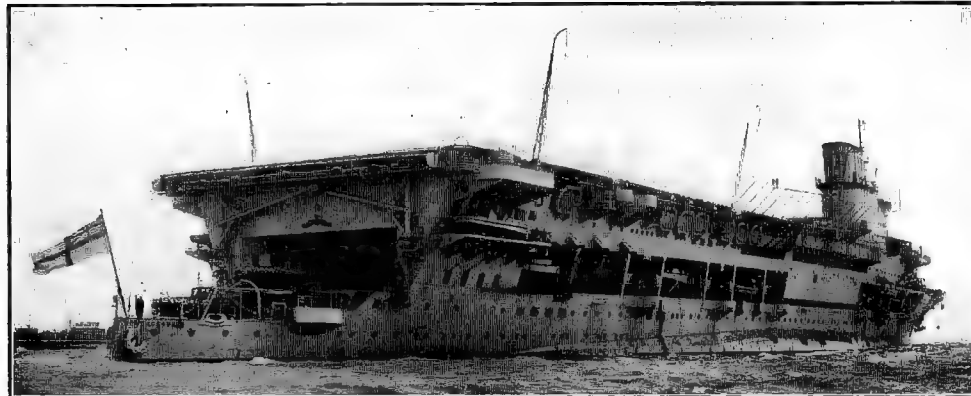
BRITISH NAVY—AIRCRAFT CARRIER.

Aircraft Carrier—BRITISH



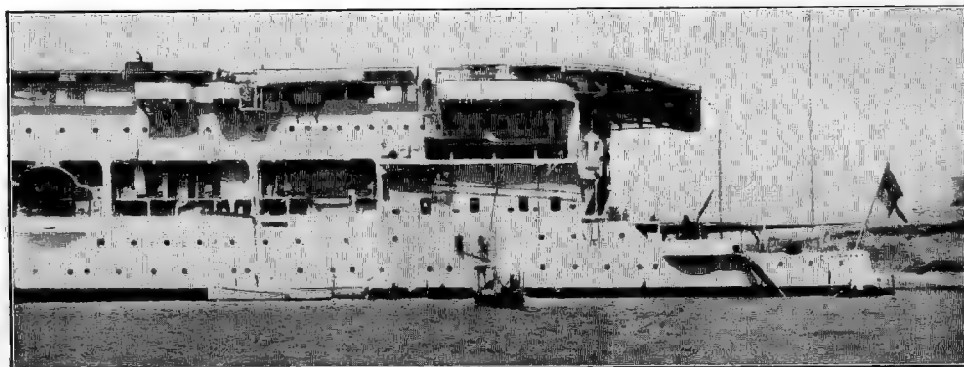
COURAGEOUS.

1928 Photo, Cribb.



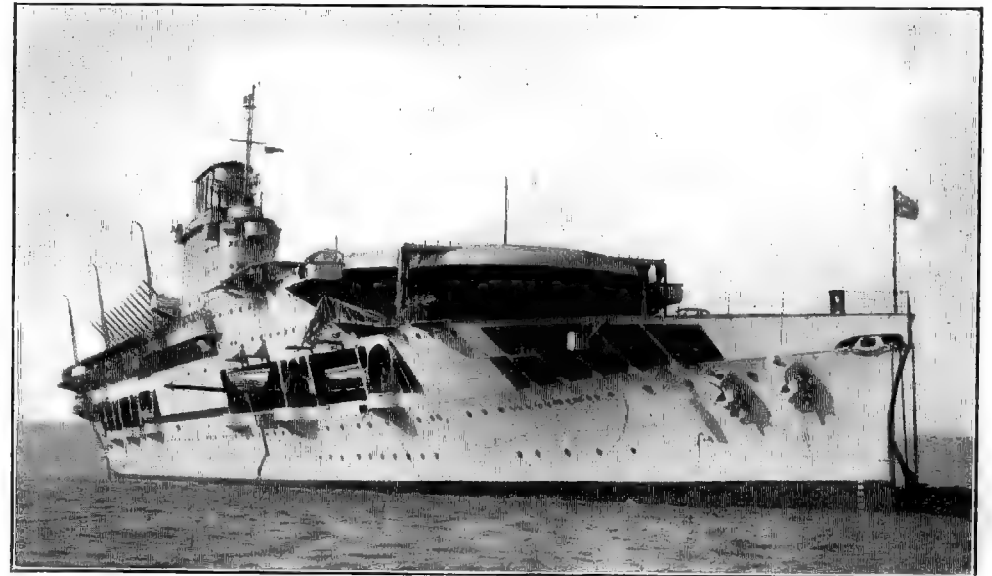
COURAGEOUS.

1928 Photo, Cribb.



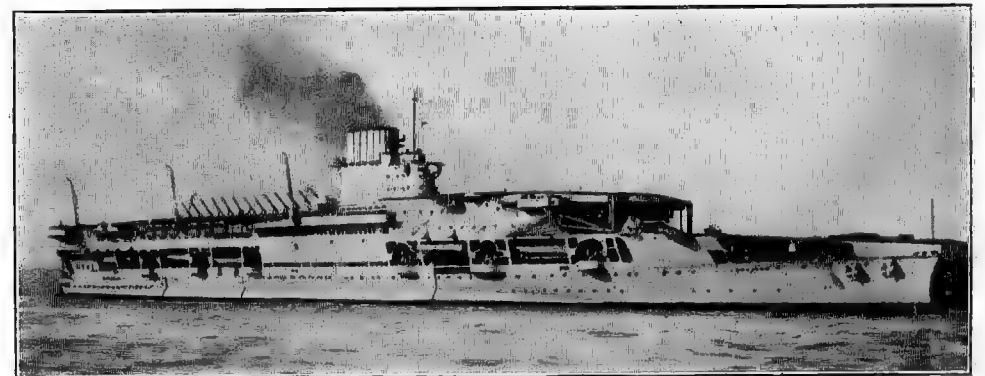
Shewing extension of flight deck aft.

1929 Photo, R. Tanque, Esq.



COURAGEOUS.

1928 Photo, R. Perkins, Esq.



COURAGEOUS.

1928 Photo, R. Perkins, Esq.

(YORK CLASS—2 SHIPS.)

YORK (July 17th, 1928), **EXETER** (July 18th, 1929).

“Standard” displacement, 8400 tons.

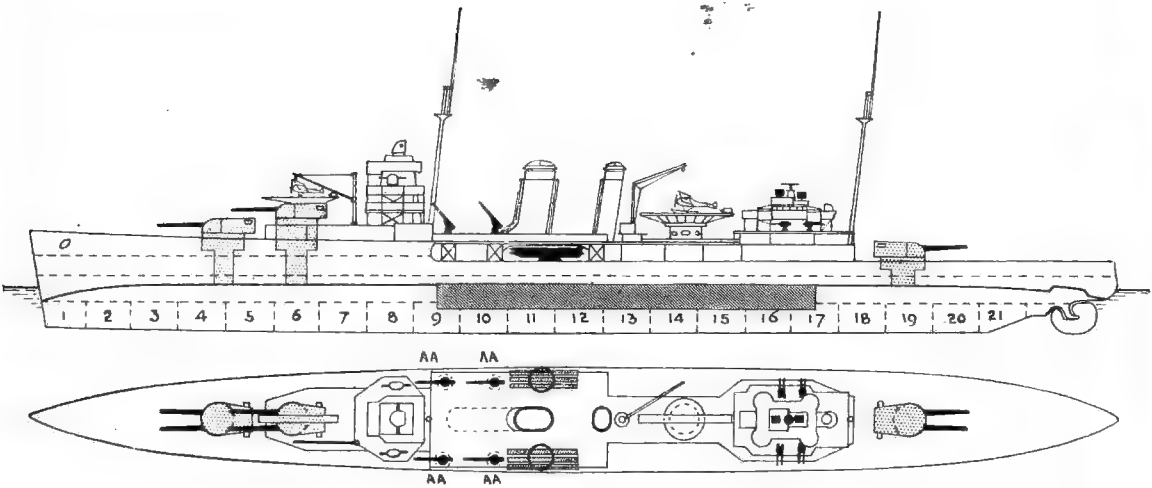
Length, 540 (p.p.), 575 (o.a.) feet. Beam, 57 feet. Draught, 17 feet.

Guns:

- 6—8 inch, 50 cal.
 - 4—4 inch AA.
 - 4—3 pdr.
 - 2—2 pdr. pom-pom.
- Torpedo Tubes:**
- 6—21 inch (tripled).

Armour:

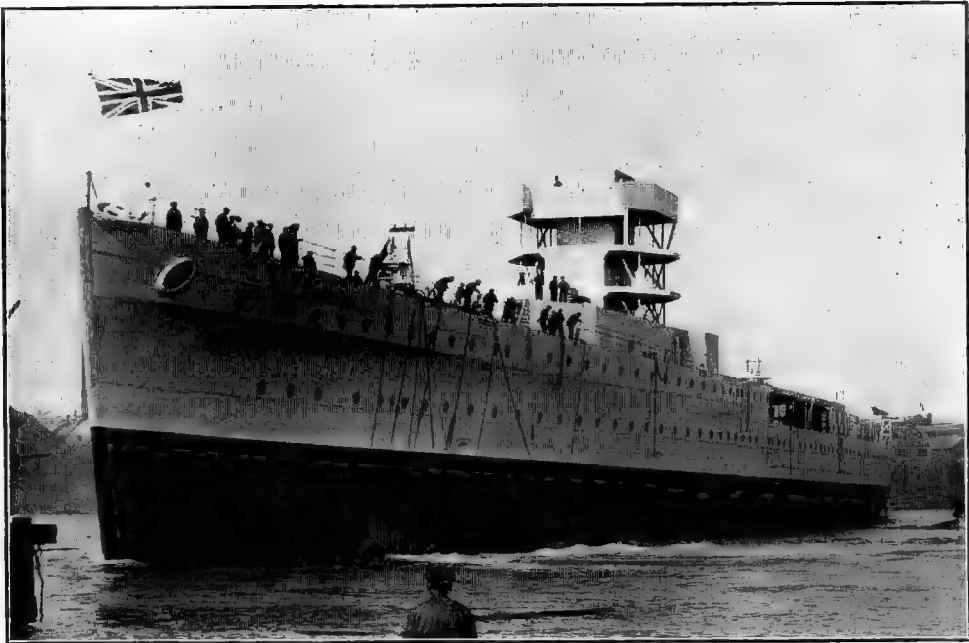
- 2" Deck
- 3" C.T.....



Machinery: Parsons geared turbines. 4 screws. Designed H.P. 80,000=32.25 kts. Oil fuel: 1900 tons. Radius, 10,000 miles at 11-14 kts. Boilers: Yarrow.

General Notes—Designed by Sir William J. Berry. *York* built under 1926-27 Estimates, *Exeter* under 1927-28. *York* and *Exeter* will probably be attached to New Zealand Division.

Name	Builder	Machinery	Ordered	Begun	Completed	Trials	Boilers
<i>York</i> <i>Exeter</i>	Palmer's Devonport Y.	Palmer's Parsons	1927 1928	May '27 Aug. '28	Dec. '29 Mar. '30		Yarrow



YORK.

1928 Photo, Topical.



SUSSEX.

1929 Photo, Cribb, Southsea.



DEVONSHIRE.

1929 Photo, Abrahams, Devonport.

(LONDON AND DORSETSHIRE CLASSES.)

(LONDON CLASS—4 SHIPS.)

DEVONSHIRE (Oct 22nd, 1927).

LONDON (Sept. 14th, 1927).

SHROPSHIRE (July 5th, 1928).

SUSSEX (Feb. 22nd, 1928).

(DORSETSHIRE CLASS—5 SHIPS.)

DORSETSHIRE (Jan. 29th, 1929), **NORFOLK** (Dec. 12th, 1928), **NORTHUMBERLAND**, **SURREY**, and 1 unnamed (projected under 1929-30 Programme).

“Standard” displacement, 10,000 tons (about 14,000 tons full load).

Length { p.p. 595 feet } Beam, 66 feet. Draught, 17 feet.
{ o.a. 633 feet }

Guns:

8—8 inch, 50 cal.

4—4 inch AA.

4—3 pdr.

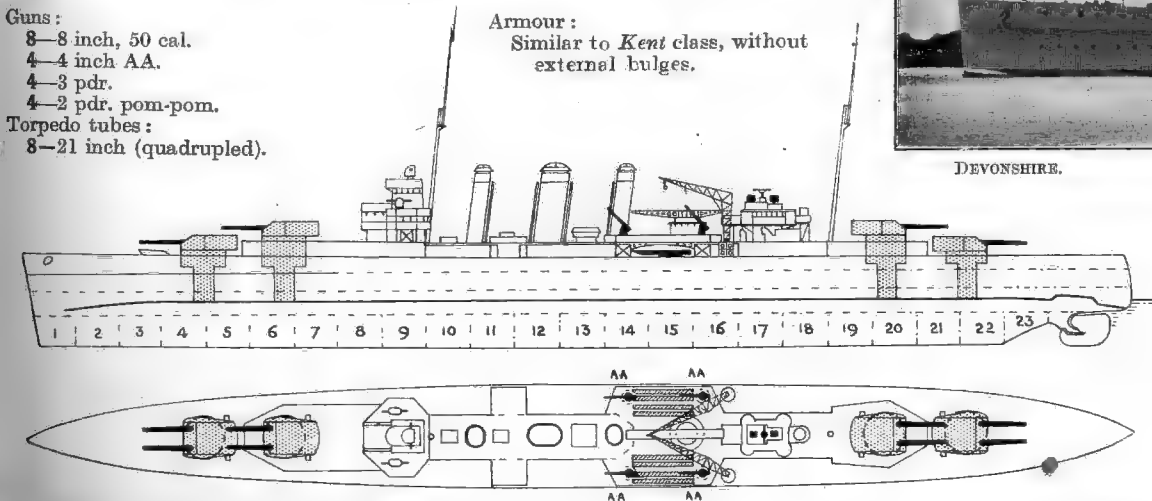
4—2 pdr. pom-pom.

Torpedo tubes:

8—21 inch (quadrupled).

Armour:

Similar to Kent class, without external bulges.



LONDON.

1929 Photo, Cribb, Southsea.



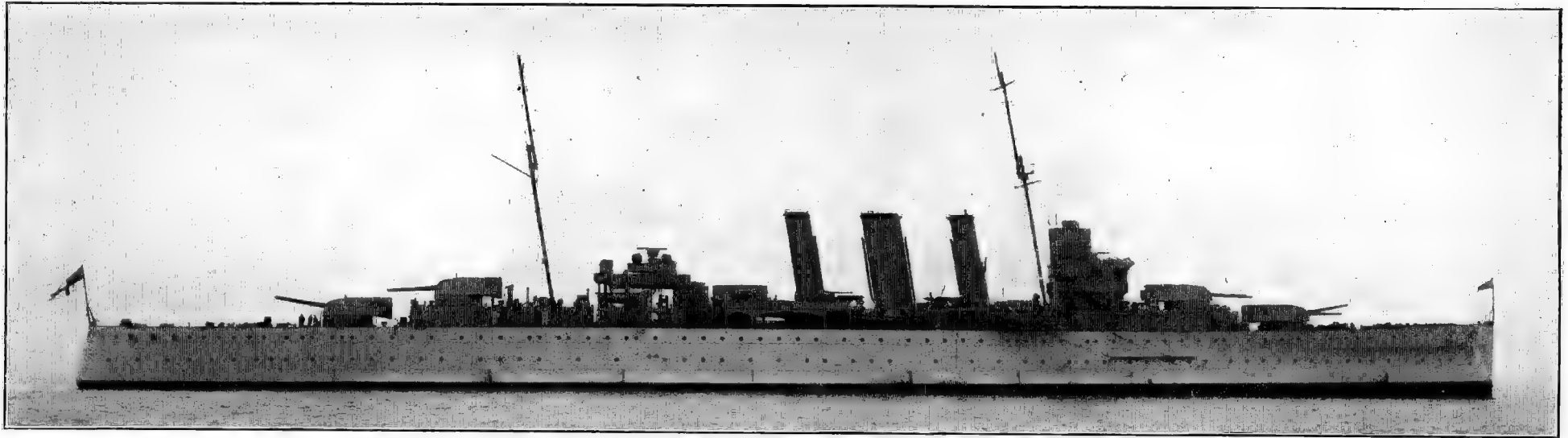
DEVONSHIRE.

1929 Photo, Abrahams, Devonport.

Machinery: Geared turbines. 4 screws. Designed S.H.P. 80,000=32.25 kts. Oil fuel: 3200 tons.

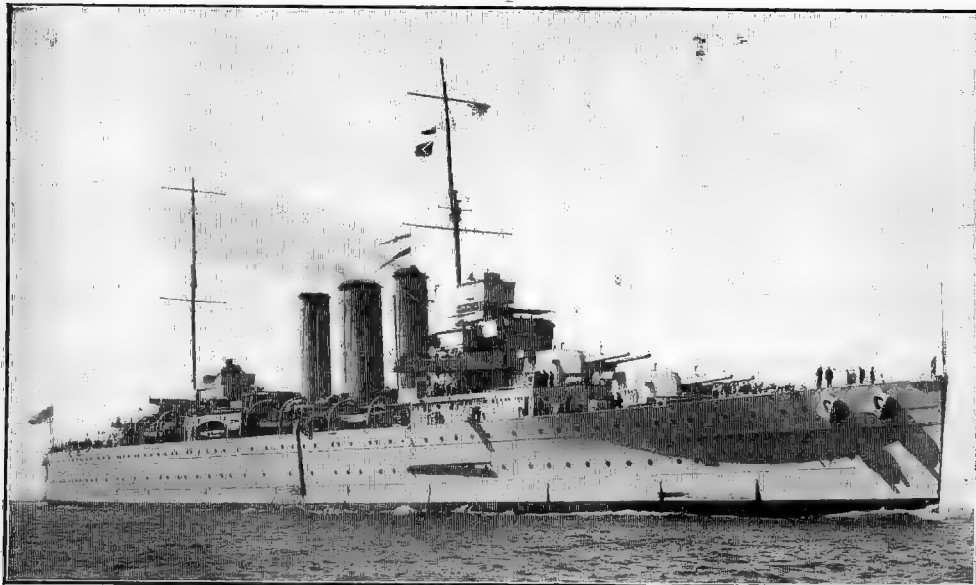
Name	Builder	Machinery	Ordered	Begun	Completed	Trials	Boilers
Devonshire	Devonport Y.	Vickers	1925	16/3/26	3/29		Yarrow in all
London	Portsmouth Y.	Fairfield		23/2/26	1/29		
Shropshire	Beardmore	Beardmore		2/26	9/29		
Sussex	Hawthorn, Les.	Hawthorn	1926	1926	3/29	To be completed 5/30	
Dorsetshire	Portsmouth Y.	Cammell Laird		21/9/27			
Norfolk	Fairfield	Fairfield	1929	7/27	(See Notes)		
Northumberland	Devonport Y.						
Surrey	Portsmouth Y.						

General Notes.—All designed by Sir William J. Berry. London class authorised by 1925-26 Estimates, Norfolk and Dorsetshire under 1926-27, Northumberland and Surrey under 1928-29. The laying down of the last two ships has been deferred pending issue of disarmament proposals.



KENT.

1928 Photo, Stephen Cribb, Southsea.



1928 Photo, Cribb.



CORNWALL.

1928 Photo, Cribb.

1924 BRITISH CRUISERS.

Cruisers—BRITISH

(KENT CLASS—5 SHIPS.)

BERWICK (March 30th, 1926), **CORNWALL** (March 11th, 1926), **CUMBERLAND** (March 16th, 1926), **KENT** (March 16th, 1926), **SUFFOLK** (Feb. 16th, 1926).

"Standard" displacement, 10,000 tons (13,630 deep load).

Complement, 679 (710 as flagship).

Length (p.p.) 590 feet, (o.a.) 630 feet. Beam, 68½ feet. Draught, 16½ feet (mean).

Guns :

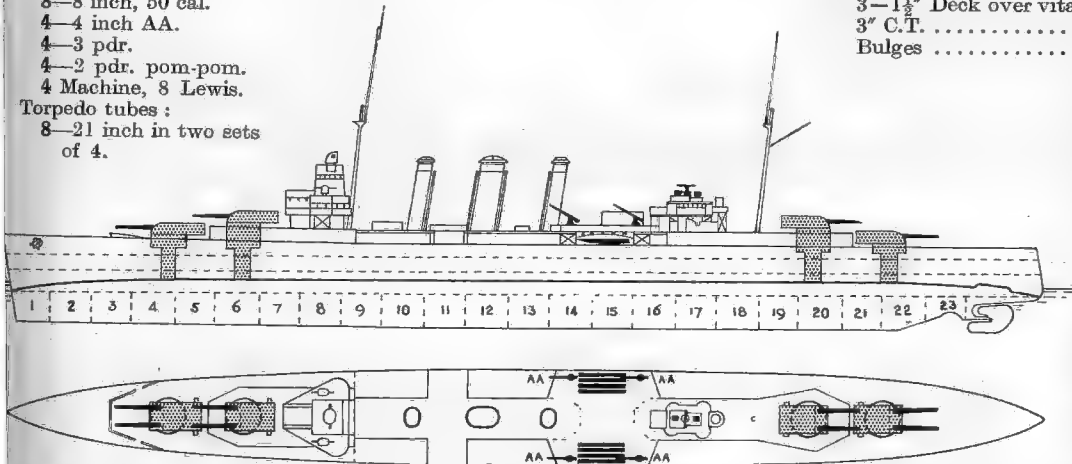
- 8—8 inch, 50 cal.
- 4—4 inch AA.
- 4—3 pdr.
- 4—2 pdr. pom-pom.
- 4 Machine, 8 Lewis.

Torpedo tubes :

- 8—21 inch in two sets of 4.

Armour :

- 3—1½" Deck over vitals
- 3" C.T.
- Bulges



Machinery : Geared turbines. 4 screws. Designed S.H.P. 80,000 = 31.5 kts. Boilers : 8 Yarrow in all. Oil fuel : 3400 tons. Radius at full speed, 2300 miles ; at economical speed (11—14 kts.), 10,400 miles.

General Notes.—Built under 1924-25 Estimates, designed by Sir E. H. Tennyson d'Eyncourt. In many ways these ships may be regarded as modern editions of the old *Diadem* class, and on paper, do not compare very favourably with their foreign contemporaries, being about 3 knots slower. It is reported that additional weight can be carried on the displacement and that a catapult and aeroplanes will be fitted. Their chief characteristic is their high freeboard, and the results of discharging torpedoes from such an elevation will be awaited with interest. They are the first flush decked cruisers since the *Powerful* class. Two ships of this type (*Australia* and *Canberra*) built for the Australian Navy. Average cost of this type is £1,970,000. Annual upkeep is £238,850 per ship.

Gunnery Notes.—The arrangement of the armament is on the same general principle as obtains in recent French and Italian designs. Exceptional elevation has been given to the 8" guns, as much as 52 degrees being reported, giving an extreme range of 20,000 yards. By means of an improved ammunition supply, a very high rate of fire can be maintained (said to be 14 rounds a minute). Weight of 8 inch broadside, 2048 lbs. Total cost of armament, £700,000 ; of firing a single broadside, £408.

Armour Notes.—No side armour is included in the design, protection being afforded by a 3"—1½" deck and the usual armoured shafts around the ammunition hoists.

Torpedo Notes.—These ships carry the first quadruple tubes to be fitted in any navy.

Engineering Notes.—Boiler pressure is said to be 350 lbs. to the square inch.

Aircraft Notes.—Catapult and 2 derricks (not included in original design) to be fitted amidships in each ship of this class as opportunity occurs. Additional cost involved in mounting is £10,000.



1928 Photo Cribb.



1928 Photo, Cribb.

Name.	Builder	Machinery	Ordered	Began	Completed	Trials	Turbines
<i>Berwick</i>	Fairfield	Fairfield	1924	11/24	9/27	= 32.35	Brown-Curtis
<i>Cornwall</i>	Devonport Y.	Beardmore		9/10/24	11/27		
<i>Cumberland</i>	Vickers	Vickers		10/24	10/27		
<i>Kent</i>	Chatham Y.	Hawthorn		15/11/24	2/28		
<i>Suffolk</i>	Portsmouth Y.	Parsons		30/9/24	1/28		

BRITISH—Cruiser.

(“ E ” CLASS—FIRST SHIP.)

ENTERPRISE (23rd December, 1919).

“Standard” displacement, 7100 tons; *normal* displacement, 7580 tons.
Complement, 572/577.

Length $\left\{ \begin{array}{l} p.p. 535 \text{ feet} \\ o.a. 570 \text{ feet} \end{array} \right\}$ Beam, $54\frac{1}{2}$ feet. Draught $\left\{ \begin{array}{l} mean 16\frac{1}{2} \text{ feet.} \\ max. \text{ feet.} \end{array} \right\}$

Guns :

- 7—6 inch, 50 cal. (Dir. Con.)
3—4 inch AA.
4—3 pdr.
2—2 pdr. pom-pom.
2 M.G.
8 Lewis.

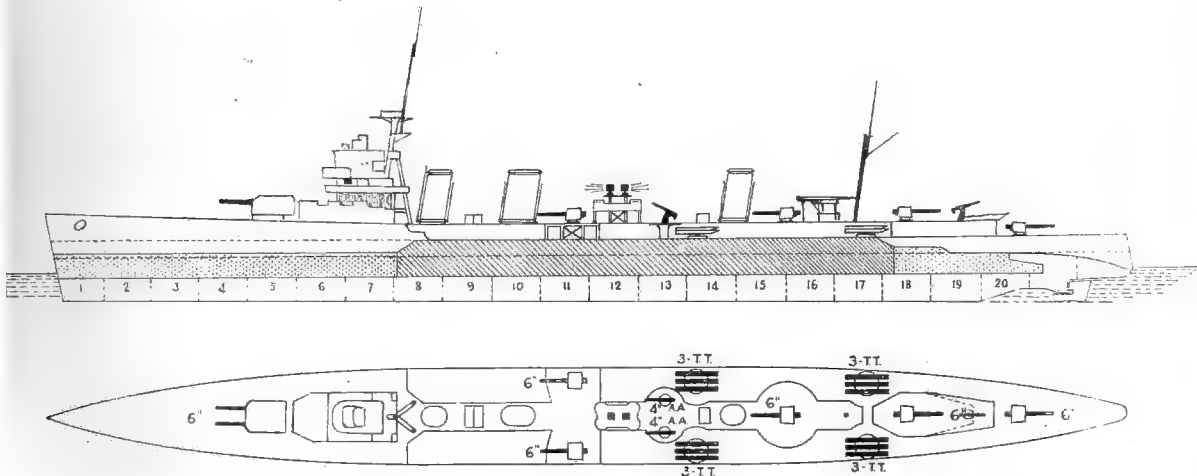
Armour (H.T.) :

- 3" Side (amidships)
2½"-1½" Side (bow)
2" Side (stern)
1" Upper deck (amidships) ..
1" Deck (over rudder)
Turret

Torpedo tubes (21 inch) :

16, in four quadruple mountings, above water.

Machinery : Turbines, 4 sets Brown-Curtis (geared). 4 screws. Designed S.H.P. 80,000 = 33 kts. (light), 32 kts. (full load). Boilers : 8 Yarrow small tube. Fuel (oil only) : *normal*, 650 tons ; *maximum*, 1600 tons.



Ahead:
3 to 4—6 inch.

Broadside: 6—6 inch, 6—21 inch T.T.

Astern :
3 to 4—6 inch.

1918 BRITISH CRUISER.



ENTERPRISE.

1926 Photo, Abrahams & Sons, Devonport.



ENTERPRISE.

1926 Photo, Abrahams & Sons, Devonport.

General Notes.—It will be observed that the bridge is of a novel type, which has attained fuller development in the *Kent* class. This and the twin turret forward render it easy to distinguish this ship from *Emerald*.

Gunnery Notes.—Pairing of forward 6 inch guns adopted as an experiment in this ship, has been followed closely in the *Nelson* and *Rodney*. (Additional notes will be found on a later page, under sister ship *Emerald*.)



ENTERPRISE. 1926 Photo, Abrahams & Sons, Devonport.



EMERALD.

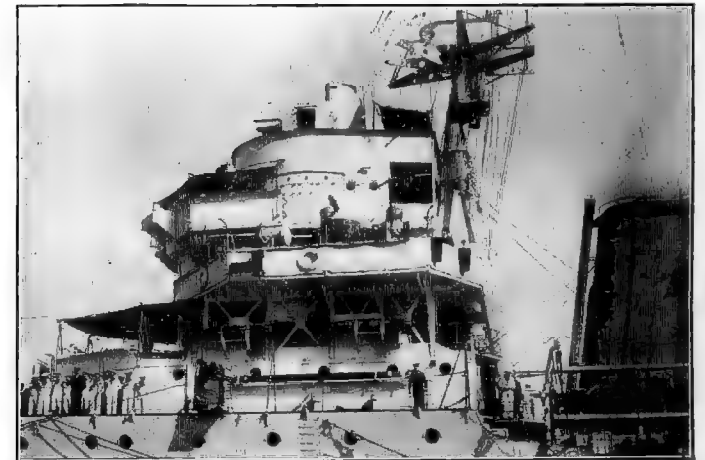
1929 Photo, Abrahams, Devonport.

ADDITIONAL VIEWS OF "E" CLASS



EMERALD.

1929 Photo, Abrahams, Devonport.



Details of bridgework, ENTERPRISE. 1926 Photo, Abrahams & Sons, Devonport.

BRITISH—Cruiser.

(“ E ” CLASS—SECOND SHIP.)

EMERALD (19th May, 1920),

"Standard" displacement, 7,100 tons; *normal* displacement, 7550 tons.
Complement, 572/577.

Length { p.p. 535 feet } Beam 54½ feet. Draught { mean 16½ feet
o.a. 570 feet } max. feet.

Guns :

7—6 inch, 50 cal. (**Dir. Con.**)

3—4 inch AA.

4—3 pdr.

2—2 pdr. pom-pom.

2 M.G.

8 Lewis

Torpedo tubes (21 inch) :

16, in four quadruple mountings, *above water*.

Armour (H.T.):

3" Side (amidships)

$2\frac{1}{2}'' - 1\frac{1}{2}''$ Side (bow)

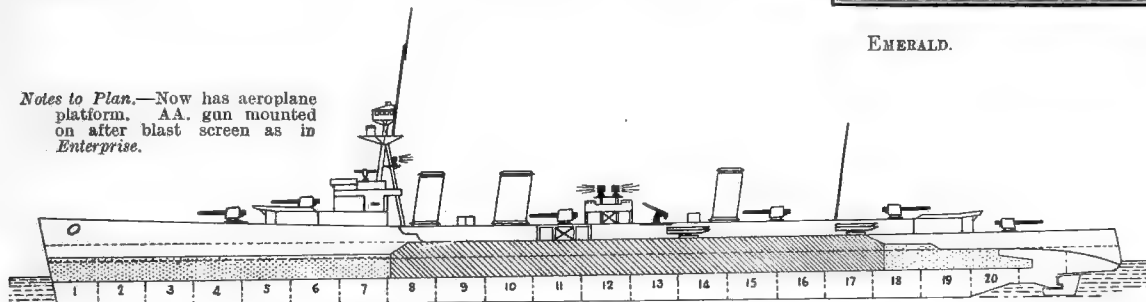
2nd Side (stern)

1st Upper deck (amidships)

1st Deck (over rudder)

Machinery : Turbines, 4 sets Brown-Curtis (geared). 4 screws.
Designed S.H.P. 80,000=33 kts. (light), 32 kts. (full load). Boilers : 8
Yarrow small tube. Fuel (oil only) : *normal*, 650 tons ; *maximum*,
1746 tons.

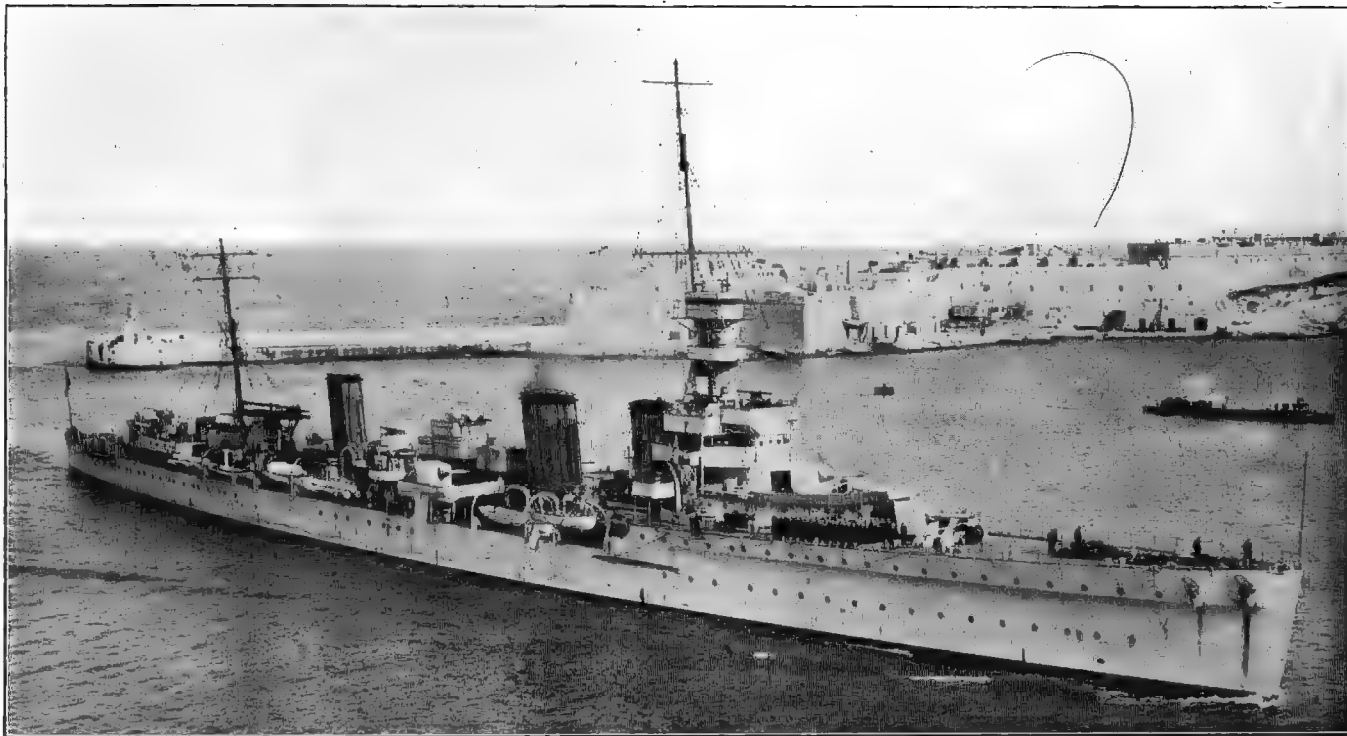
Notes to Plan.—Now has aeroplane platform. AA. gun mounted on after blast screen as in *Enterprise*.



Ahead :
3 to 4—6 inch.

Broadside : 6—6 inch, 8—21 inch T.T.

Astern :
3 to 4—6 inch.



EMERALD.

1926 Photo, Grand Studio, Malta.

Notes for both Ships, "E" Class.

Gunnery Notes.—Elevation of 6-inch, up to 40°. Heavy Director on foremast. R.F. on forward bridge.

Engineering Notes.—Geared turbines, 4 shafts. For wing shafts, engine-rooms are forward; for inner shafts, engine-rooms are aft. H.P. and L.P. turbines in same casing; astern turbine in exhaust casing of L.P. turbines. 8 boilers in 4 w.t. compartments, part forward of amidships magazines and part abaft forward engine-room. This arrangement of boiler rooms is responsible for the somewhat unusual spacing of the funnels.

General Notes.—Began under Emergency War Programme. A third ship, *Euphrates*, ordered from Fairfield Co., cancelled. They were designed early in 1918, to have a speed equal to that of any of the German Light Cruisers then existing or likely to be built. The distribution of guns was recommended by Gunnery Officers on the basis of war experience and is generally the same as that for *Hawkins*, *Raleigh*, &c., described hereafter. Owing to their high speed and fine entry, the "C" and "D" classes of Light Cruisers without trawler bows, proved very wet forward. To remedy this defect, these "E" class Cruisers have been given a very high freeboard for the whole length of fore-castle. Cost of these ships was £1,617,062 for *Emerald* and £1,751,854 for *Enterprise*. Full load displacement said to exceed 9000 tons.

<i>Name</i>	<i>Builder</i>	<i>Machinery</i>	<i>Ordered</i>	<i>Begun</i>	<i>Completed</i>	<i>Trials: H.P. kts.</i>	<i>Turbines</i>
<i>Emerald Enterprise</i>	*Armstrong †Clydebank	Wallsend Clydebank	7/3/18 7/3/18	Sept. 23/18 June 28/18	Jan. 14/'26 Jan., '26	80450 = 32.9 (<i>Enterprise</i> not tried).	Brown-Curtis Brown-Curtis

Towed to *Chatham D.Y., †Devonport D.Y., for completion.

(IMPROVED BIRMINGHAM CLASS—FIRST 3 SHIPS.)

EFFINGHAM (8th June, 1921), **FROBISHER** (20th March, 1920), **HAWKINS** (1st Oct., 1917).

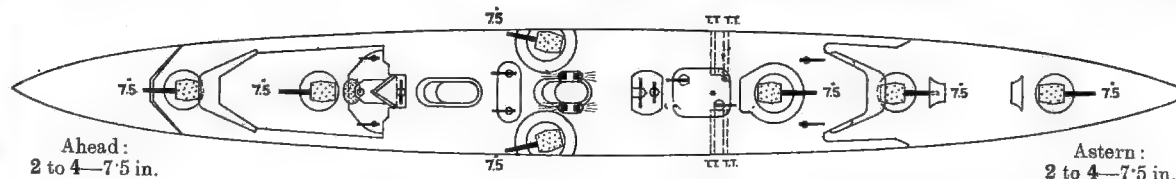
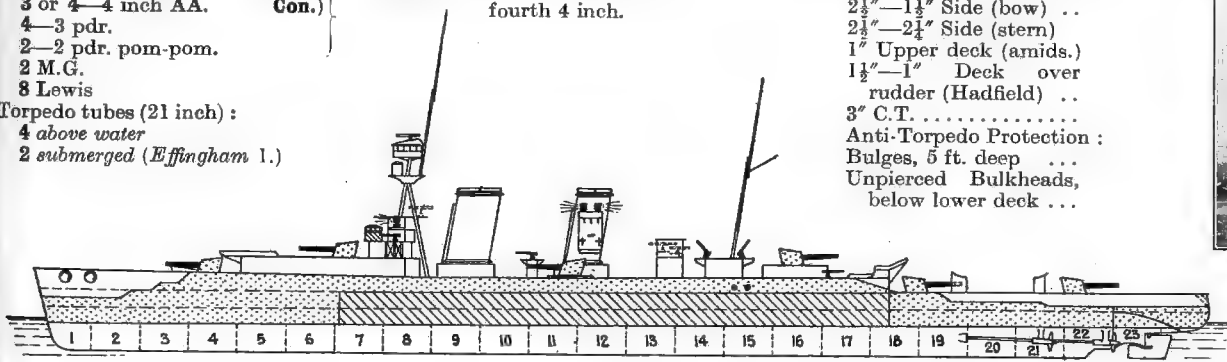
Normal displacement, *Effingham* 9770 tons, *Frobisher* 9860 tons, *Hawkins* 9750 tons (as completed, all displace over 10,000). Complement, 712/749.

Length { *p.p.* 565 feet } Beam { *w.l.* 58* feet. } Draught { *mean* 17½ feet.
{ *o.a.* 605 „ } { *outside bulges* 65 „ } { *max.* 20½ „ }

*Approximate.

Guns : All fitted as Flagships.
7—7.5 inch, 45 cal., Mk. VI (Dir.) *Hawkins* has 7.5 in. 50 cal., Mk. V. and a
3 or 4—4 inch AA. Con.) fourth 4 inch.
4—3 pdr.
2—2 pdr. pom-pom.
2 M.G.
8 Lewis

Armour (H.T. or Nickel) :
3"—2" Side (amidships)
2½"—1½" Side (bow) ..
2½"—2½" Side (stern)
1" Upper deck (amidships)
1½"—1" Deck over
rudder (Hadfield) ..
3" C.T.
Anti-Torpedo Protection :
Bulges, 5 ft. deep ...
Unpierced Bulkheads,
below lower deck ...

Torpedo tubes (21 inch) :
4 above water
2 submerged (*Effingham* 1.)


Broadside : 6—7.5 in., 3—21 in. tubes.

Machinery : Turbines, Brown-Curtis or Parsons (geared cruising).
Designed S.H.P. in *Hawkins*, 60,000=30 kts. *Effingham* and *Frobisher*,
65,000=30.5 kts. 4 screws. Boilers : 12 Yarrow (small tube). Fuel :
as completed, 1000 tons oil *normal*, 2150 *maximum*. *Hawkins*, as re-
constructed, 2600 tons maximum.

Gunnery Notes.—7.5's are a Vickers type B.L. on centre-pivot mountings and with H.A.
elevation. Very handy guns, but at H.A. (30°) elevation breeches close to deck.
Hoists very noisy and interfere with telephonic communication with control stations.
Unofficially stated that muzzle velocity is high, so that guns have practically a
range only limited by *maximum* visibility. Armaments originally projected for this
class were (a) mixed battery of 9.2 inch and 6 inch, (b) 14—6 inch. Heavy type
director on foremast. Third AA. gun in *Effingham* and *Frobisher* is on Q.D. between
7.5 inch guns.

Torpedo Notes.—Above water tubes are single, mounted athwartships on upper deck
below mainmast. Submerged tubes abeam of C.T.

Aircraft Notes.—All these ships will be fitted with catapults.



FROBISHER.

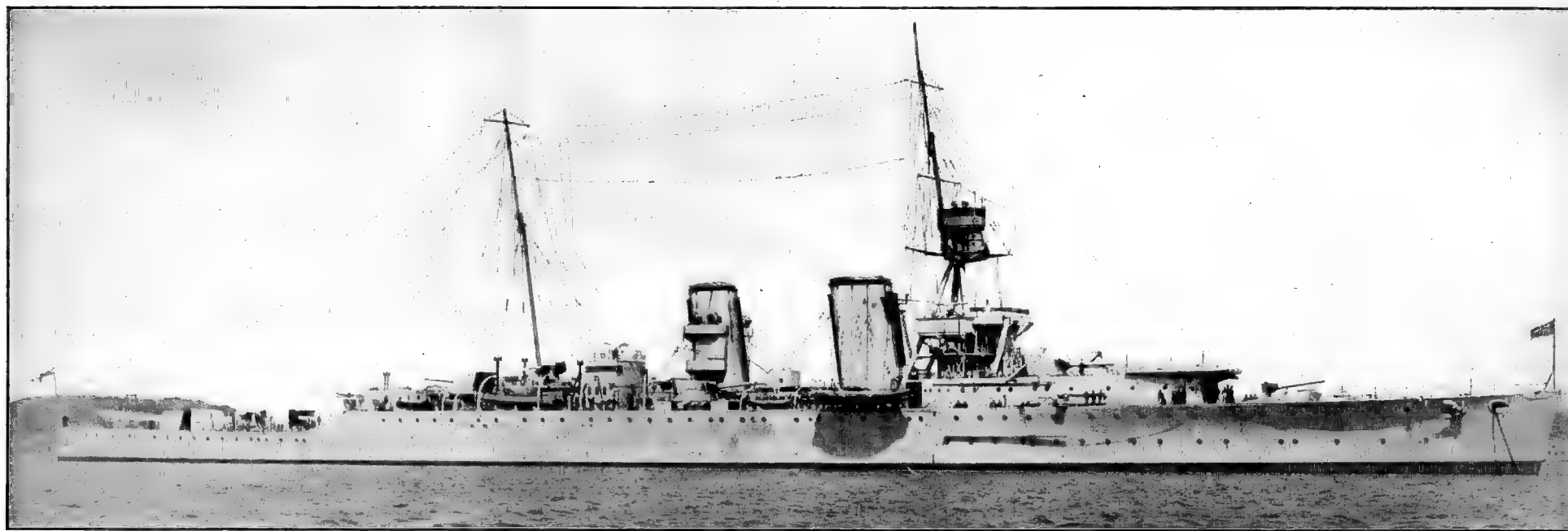
1924 Photo, Abrahams, Devonport.

General Notes.—Begun under Emergency War Programme. One unit of this class was accelerated in
building, and completed as the Aircraft Carrier *Vindictive*, but was re-converted into a Cruiser, 1923
(see later page for particulars). Another, *Raleigh*, was wrecked in August, 1922. *Hawkins* cost
£1,636,745; *Effingham*, £2,175,000; *Frobisher*, £2,035,915. Refits : *Frobisher*, 1928; *Hawkins*, 1929.
All vessels of this class are excellent seaboats.

FROBISHER
with
catapult.

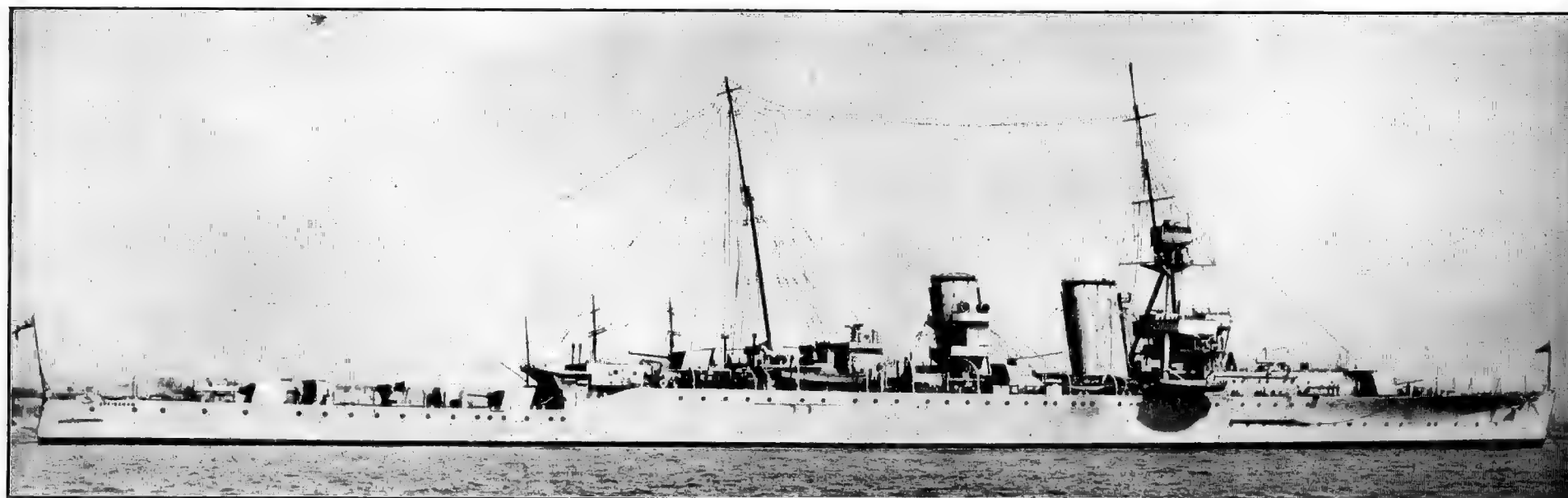
Name	Builder	Machinery	Begun	Completed	Trials : H.P. kts.	Turbines
<i>Effingham</i>	Portsmouth D.Y.	H. & Wolff	2. Ap', '17	July, '25		Brown-Curtis
<i>Frobisher</i>	Devonport D.Y.	Wallsend	2. Aug., '16	20 Sept. '24		Brown-Curtis
<i>Hawkins</i>	Chatham D.Y.	Parsons	June, '16	July 25, '19	60980=23'7	Parsons

1928 Photo, Abrahams
& Sons, Devonport.



EFFINGHAM.

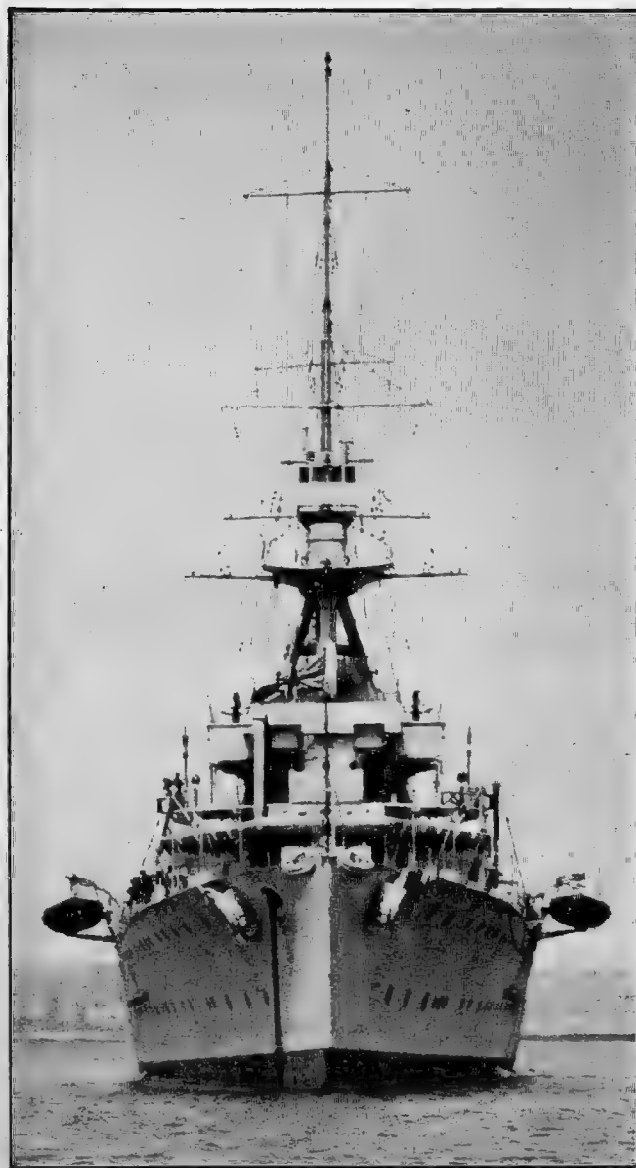
1925 Photo, Abrahams, Devonport.



EFFINGHAM.

1925 Photo, Abrahams, Devonport.

1915-16 BRITISH CRUISERS.



EFFINGHAM.

1925 Photo, Abrahams, Devonport.



EFFINGHAM.

1925 Photo, Abrahams, Devonport.



HAWKINS.

BRITISH—Cruiser.

1915-16 BRITISH CRUISER.

(IMPROVED BIRMINGHAM CLASS—4TH SHIP.)

VINDICTIVE (ex *Cavendish*) (17th January, 1918.)

Normal displacement, 9750 tons (as completed, over 10,000).

Complement, 717.

Length { *p.p.*, 565 feet } Beam { *waterline*, *58 feet }
 { *o.a.*, 605 feet } { *outside bulges*, 65 feet }

Draught { *mean*, 17½ feet }
 { *max.*, 20½ feet }

Guns :

6—7.5 inch, 50 cal. Mark V. (Dir. Con.)
 3—4 inch AA.
 4—3 pdr.
 2—2 pdr. pom-pom.
 8 Lewis.

Torpedo tubes (21 inch) :

4 above water.
 3 submerged.

Flights carried :

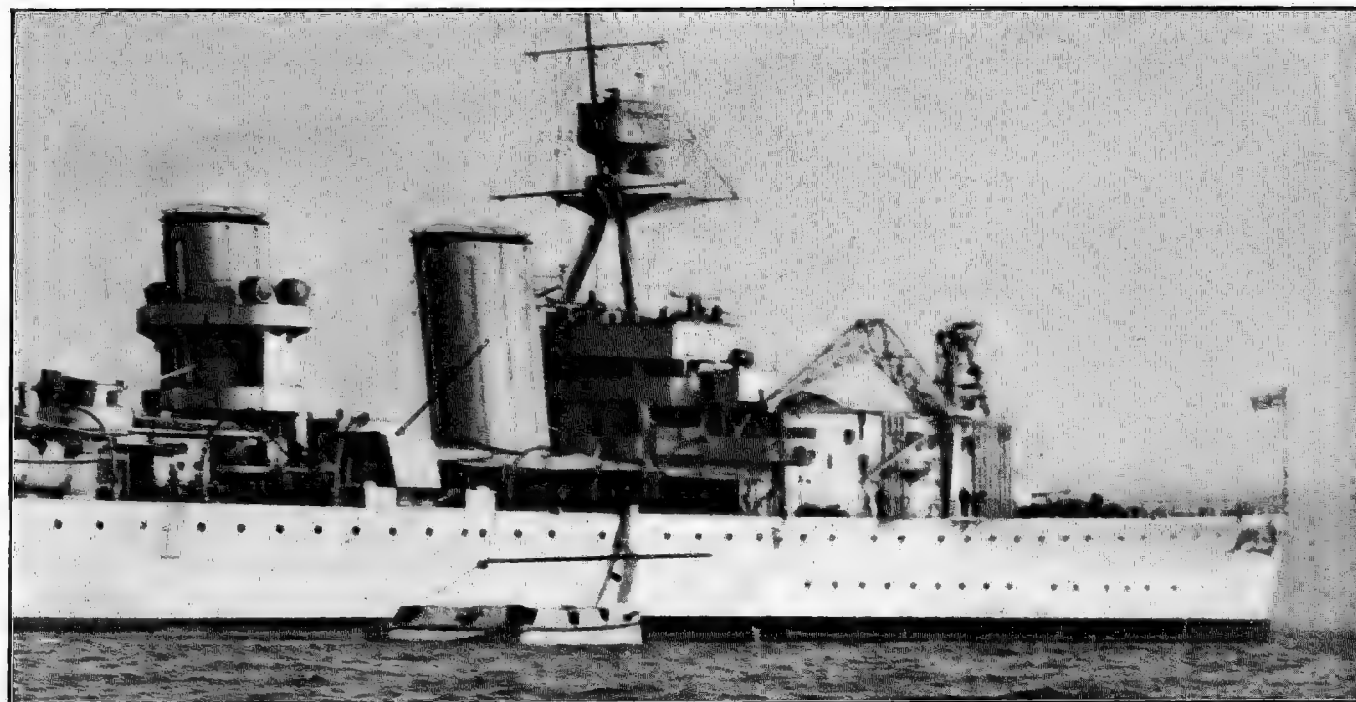
1 Spotter Reconnaissance.
 (3 Fairey III D seaplanes).

Armour (H.T. or Nickel) :

3"—2" Side (amidships) ...
 2½"—1½" Side (forward and aft)
 1" Upper deck (amidships).
 1½" Deck over rudder (Hadfield)
 3" C.T.

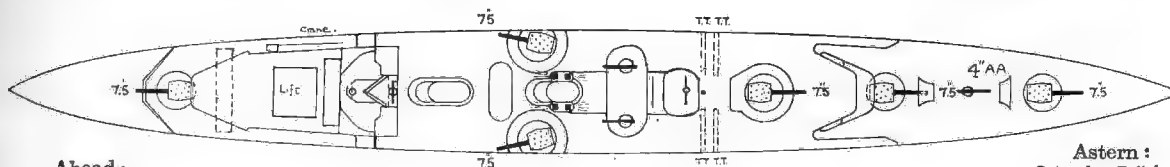
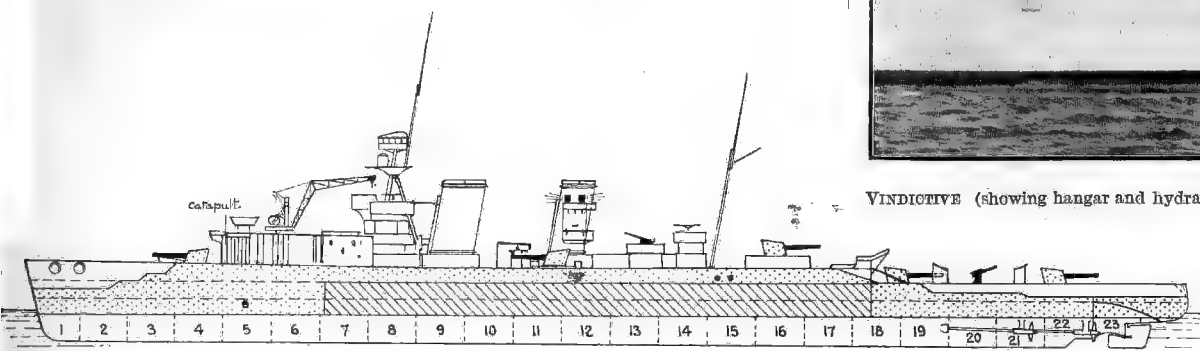
Anti-Torpedo Protection :

Bulges, 5 feet deep.
 Unpierced bulkheads below lower deck.



VINDICTIVE (showing hangar and hydraulic crane).

1925 Photo, Abrahams, Weymouth.



Ahead :
 1 to 3—7.5 in.

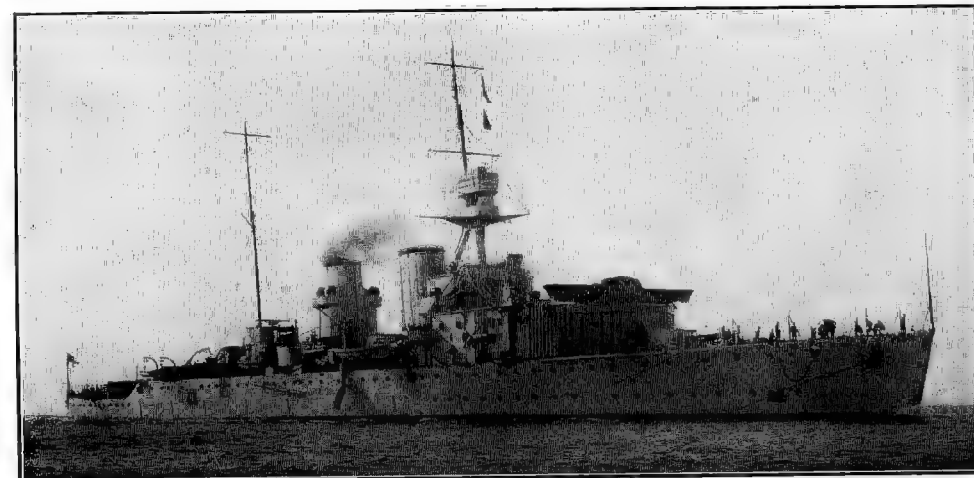
Broadside : 5—7.5 in., 3—21 in. tubes.

Astern :
 2 to 4—7.5 in.

Machinery : Parsons (geared) turbines. 4 screws. Boilers : Yarrow. Designed S.H.P. 60,000 = 30 kts. (trials, 63,600 = 29.12 kts.). Fuel : 800 tons coal and oil *normal* ; 800 tons coal + 1420 tons oil *maximum*.

Gunnery and Torpedo Notes.—As *Hawkins*, *Birmingham* and *Frobisher* on previous page.

General Notes.—Built under Emergency War Programme by Harland & Wolff, Ltd. Commenced 29th June, 1916, under name of *Cavendish* as a unit of "Improved Birmingham" class, but renamed *Vindictive* and completed as an Aircraft Carrier, October, 1918. Re-converted into a cruiser 1923-25, but still retains aeroplane hangar and catapult forward, (on starboard side of superstructure), so is in a sense a hybrid type. Refitted 1928.



VINDICTIVE.

1925 Photo Cribb, Southsea.

("D CLASS.")

DESPATCH (24th Sept., 1919),**DELHI** (23rd Aug., 1918),**DURBAN** (29th May, 1919), **DANAE** (26th Jan., 1918),**DAUNTLESS** (10th April, 1918), **DRAGON** (29th Dec., 1917).

Length { *p.p.* 445 feet } Beam, Draught { *mean* 14½ ft. } = 4765 tons (first 1).
 { *w.l.* 465½ " } 46½ ft. { *max.* 16½ ft. } = 4650 tons (other 5).
 { *o.a.* 472½ " }

Complements of all, 450/469.

All except *Despatch* fitted as Flagships.

Guns :

6—6 inch, 50 cal. (Dir. Con.)

3—4 inch AA.

4—3 pdr.

2—2 pdr. pom-pom.

2 M.G.

8 Lewis.

Torpedo tubes (21 inch)

12 in 4 triple deck mountings.

Armour (H.T.) :

3" Side (amidships) ...

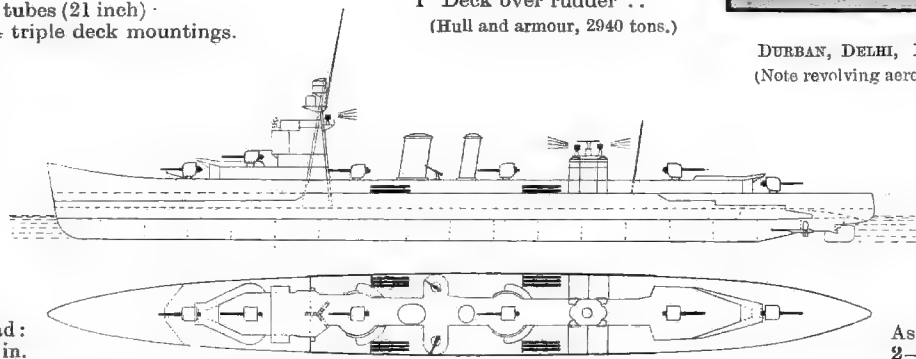
2", 1½", 1½" Side (bow

and stern)

1" Upper deck (amids.)

1" Deck over rudder ..

(Hull and armour, 2940 tons.)



Broadside: 6—6 in., 6—21 in. tubes.

Machinery : Turbines (all-geared), Brown-Curtis or Parsons types. Designed S.H.P. 40,000 = 29 kts. 2 screws. Boilers : 6 Yarrow (small tube). Oil fuel only : *normal*, 300 tons ; *maximum*, 1050 tons. Machinery and engineering stores = 945 tons.

Name	Builder	Machinery	Ordered	Begun	Completed	Trials: H.P. kts.	Turbines
<i>Despatch</i>	Fairfield*	Fairfield	Mar., 1918	July, 1918	2 June, 1922		Brown-Curtis
<i>Delhi</i>	Armstrong	Wallsend	Sept., 1917	29 Oct., '17	June, 1919	41,381 = 28.5†	Brown-Curtis
<i>Durban</i>	Scotts*	Scotts	Sept., 1917	Jan., 1918	1 Sept. 1921	41,026 =	Brown-Curtis
<i>Danae</i>	Armstrong	Wallsend	Sept., 1916	Dec., 1916	July, 1918	40,463 =	Brown-Curtis
<i>Dauntless</i>	Palmer	Wallsend	Sept., 1916	Jan., 1917	Dec., 1918	42,808 =	Parsons
<i>Dragon</i>	Scott	Scott	Sept., 1916	Jan., 1917	Aug., 1918	40,035 =	Brown-Curtis

*Towed to following Dockyards for completion : *Despatch* to Chatham, *Durban* to Devonport.

† With P.V.s. out, and on deep draught.



DURBAN, DELHI, DESPATCH.

(Note revolving aeroplane platform and trawler bows.)

Photo added 1925.



DAUNTLESS.

1928 Photo, Cribb.

General Notes.—Emergency War Programme ships. Note that first three were ordered before *Carlisle* class. Design generally as *Ceres* class, but lengthened about 20 feet, to add a sixth 6-inch between foremast and first funnel; also triple tubes. Cost of *Delhi*, £840,182. Heavy director on foremast. *Dunedin* and *Diomedes*, of this class, both transferred to New Zealand Navy, May, 1924 and October, 1925, respectively. *Dauntless* badly damaged by grounding off Halifax, Nova Scotia, July, 1928, and completely refitted 1929. *Danae*, *Delhi*, *Dragon*, all in hand for refit, 1929.

1917-18 BRITISH CRUISERS.

A black and white photograph of the USS Johnston (DD-557), a Fletcher-class destroyer, underway at sea. The ship is viewed from a starboard profile, showing its white hull and dark upper works. Two large funnels are prominent in the center. A tall mast with various antennas and radar equipment rises from the superstructure. The ship is moving through a dark, choppy sea under a light sky.

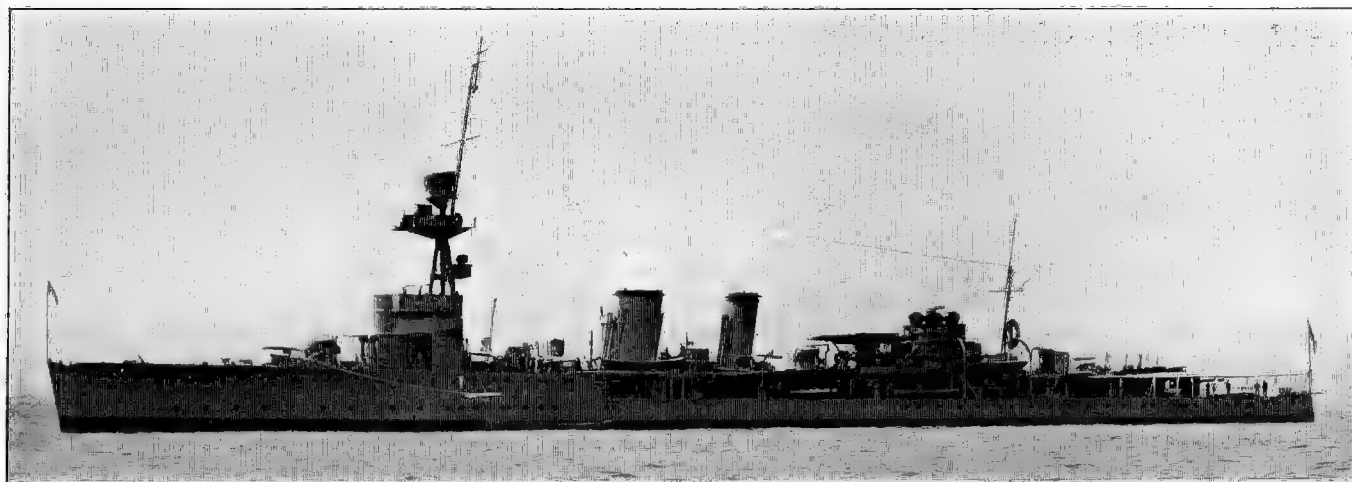
Name	Builder	Machinery	Begun	Completed	Trials	Turbines
					H.P. kts.	
Cardiff	Fairfield	Fairfield	July, 1916	July, 1917	41,450=28·96	B.-Curtis A.G
Ceres	Clydebank	Clydebank	Apr.26,'16	June, 1917	39,425=29·1	B.-Curtis A.G
Coventry	Swan Hunter	Walsend	Aug., 1916	Feb., 1918	39,067=	B.-Curtis A.G
Curacao	Pembroke D. Y.	Harland & Wolff	July, 1916	Feb., 1918	40,428=	B.-Curtis A.G
Curtlew	Vickers	Vickers	Aug., 1916	Dec., 1917	40,240=28·07	Parsons A.G.
Cairo	Cammell Laird	Cammell Laird	28 Nov., '17	24 Sep., '19		Parsons
Calcutta	Vickers	Vickers	Oct., 1917	21 Aug., '19		Parsons
Carlisle	Fairfield	Fairfield	Oct., 1917	11 Nov., '18	40,930=28·45	B-Curtis
Capetown	Cammell Laird*	Cammell Laird	23 Feb., '18	Feb., '22		Parsons
Colombo	Fairfield	Fairfield	Dec., 1917	June, '19		B-Curtis

*Towed to Pembroke D. Y. for completion.



CURACOA (and others of *Ceres* class).

1926 Photo S. T. Abrahams, Weymouth.



CALEDON. (Revolving aeroplane platform).

1921 Photo, Abrahams, Devonport.

(CALEDON CLASS—3 SHIPS.)

CALEDON* (25th Nov., 1916), **CALYPSO** (24th Jan., 1917), **CARADOC** (23rd Dec., 1916).

Displacement, 4120 tons. Complement, 400, 437.

Length $\left\{ \begin{array}{l} p.p. \text{ 425 feet} \\ o.a. \text{ 450 } ,, \end{array} \right\}$ Beam, $42\frac{3}{4}$ feet. Draught $\left\{ \begin{array}{l} \text{mean } 14 \text{ ft. } 1 \text{ in.} \\ \text{max. } 16\frac{1}{4} \text{ feet.} \end{array} \right\}$

* Fitted as Flagship.

Guns :

5—6 inch, 50 cal. (**Dir. Con.**)

2—3 inch AA.

4—3 pdr.

2—2 pdr.

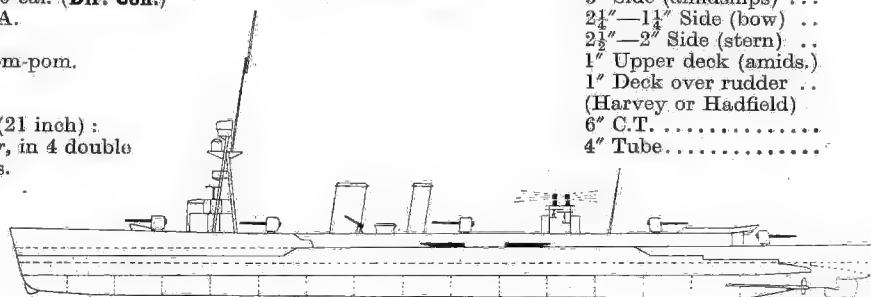
2 M.G.

2 M.G.
8 Lewi

8 Lewis.
Tornado hit

Torpedo tube (21 inch) :

8 above water, in 4 double mountings.



Ahead:
1—6 in.

Broadside: 5—6 in., 4—21 in. tubes.

Aster: 2—6 in.

Machinery: Turbines (all-g geared), Parsons. 2 screws. Designed S.H.P. 40,000 = 29 kts.

Boilers: 8 Yarrow. Fuel (oil only): *normal*, 300 tons; *maximum*, 935 tons.

Gunnery Notes.—Mark of 6-inch gun introduced in this class and mounted in later Cruisers has about 40° elevation.
Heavy type Director.

<i>Name</i>	<i>Builder</i>	<i>Machinery</i>	<i>Begun</i>	<i>Completed</i>	<i>Trials:</i> <i>H.P. kts.</i>
<i>Caledon</i>	Cammell Laird	Cammell Laird	Mar. 17, '16	Mar., '17	47,887 =
<i>Calyppo</i>	Hawthorn Leslie	Hawthorn Leslie	Feb. 7, '16	June 21, '17	43,312 =
<i>Caradoc</i>	Scott S.B. Co.	Scotts	Feb., '16	June, '17	41,196 =

General Notes.—Emergency War Programme. When new, they could make 29-30 kts. Are very wet forward, the fo'ble 6 inch being almost unlightable in a head sea. *Cassandra*, of this class, built by Messrs. Vickers Ltd., lost in Baltic by mine, soon after Armistice was signed. *Caledon* refitted 1926-27, *Caradoc* 1927-28, *Culypso* 1929.

To distinguish

Caledon class

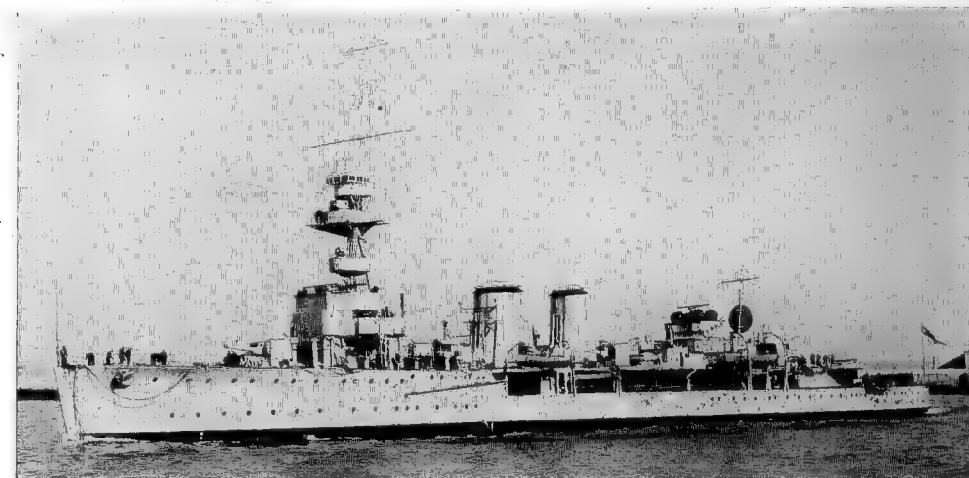
from

Centaur class

1. AA. guns abeam *between* funnels.
2. Deck tubes,
3. Raking stem.

1. A.A. guns on centre line before and abaft S.L. tower.
2. Tubes submerged.
3. "Yacht" stems.

Note.—Revolving aeroplane platform before SL.
'Tower added to Caledon 1919.



CALYPSO.

1921 Photo, S. L. Cassar, Valetta, Malta.

1914 BRITISH CRUISERS.

Cruisers—BRITISH

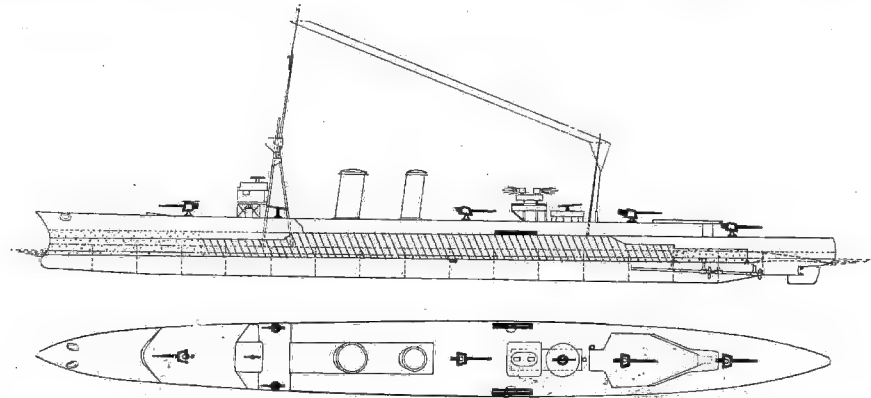
(CAMBRIAN CLASS—FIRST TWO SHIPS.)

CALLIOPE (Dec. 17th, 1914), **CHAMPION** (May 20th, 1915).

Displacement, 3750 tons. Complement, 348.

Length, 420 (p.p.), 446 (o.a.) feet. Beam, 41½ feet. Draught { mean 13½ feet.
max. 16 „

Calliope {	Guns :	4—6 inch (Dir. Con.)	Champion {	4—6 inch (Dir. Con.)	Armour (H.T.) :
		2—3 inch AA.		1—3 inch AA.	3" Side (amidships) ...
		4—3 pdr.		2—2 pdr. pom-pom.	2½"—1½" Forward
		2—2 pdr. pom-pom.		1—M.G.	2½"—2" Aft
		1 M.G.		8—Lewis.	1" Upper Deck (amidships)
		8 Lewis.		Torpedo tubes (21 inch):	1" Deck over rudder hd.
Calliope {		Torpedo tubes (21 inch):		2 submerged.	(Hadfield)
		2 submerged.		4 above water	6" C.T. } removed ? ..
				(in twin mountings).	2" Tube }



Ahead :
1—6 inch.

Broadside : 4—6 in., 1—21 in. T.T.

Astern :
2—6 inch.

Note to Plans.—Cancel all above water tubes except for *Champion*. Plans also serve for *Cambrian*, *Canterbury*, *Castor*, *Constance*, on preceding page. 3 inch AA. aft shown for *Champion*; 2—3 inch AA. shown forward for other five ships.

Machinery : Turbines (all-geared), Parsons. Screws : 4 in *Calliope*, 2 in *Champion*. Designed S.H.P. in *Calliope*, 37,500 ; in *Champion*, 40,000 = 29 kts. in both ships. Boilers : 8 Yarrow. Fuel (oil only) : 405 tons, normal ; maximum, 805 tons, *Calliope* ; 895 tons, *Champion*.

Name	Builder	Machinery	Laid down	Completed	First trials :	Turbines	Boilers	Best recent speed
Calliope Champion	Chatham Hawthorn	Parsons Hawthorn	1. Jan. '14 Mar. 9 '14	June '15 Dec. 20, '15	30,917=28 30,290= 41,000=29	Parsons A.G.	Yarrow	

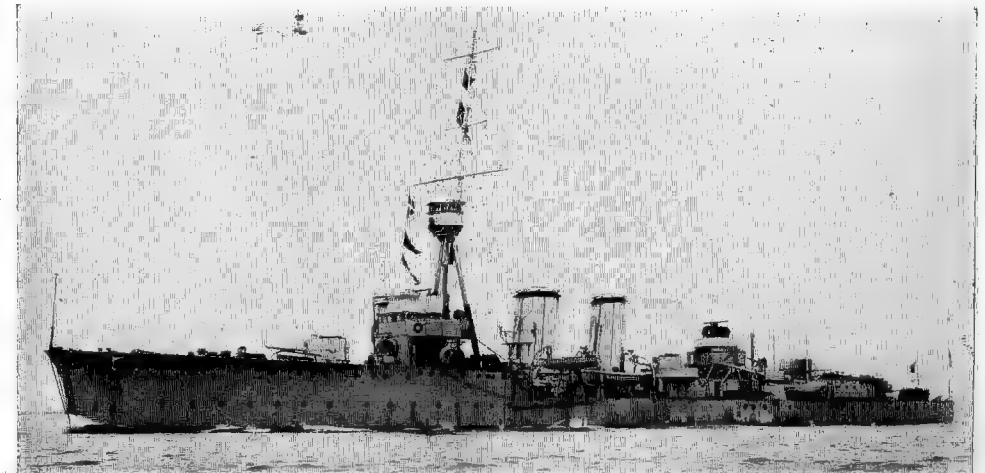
General Notes.—Began under 1913-14 Estimates, with 6 *Caroline* class, on next page. Same hull, &c., but all-geared turbines adopted. Originally had 2—6 inch and 8—4 inch guns. Light Director in foretop. *Champion* refitted, 1924-25, *Calliope* 1926-27. *Champion* is now Gunnery and Torpedo School cruiser.



CALLIOPE.

1926 Photo, S. T. Abrahams, Weymouth.

Note S.L. in wings projecting forward from bridges.



CHAMPION.

1921 Photo, Cribb, Southsea.

Retains S.L. tower with small derrick abeam of same.

BRITISH—Cruisers.

1913-14 BRITISH CRUISERS.

(CAROLINE CLASS—3 SHIPS.)

CARYSFORT (Nov. 14th, 1914), **CLEOPATRA** (Jan. 14th, 1915), **COMUS** (16th Dec., 1914).

Displacement, 3750 tons (about 4780 tons full load). Complement, 348/357.

Length (p.p.), 420 feet. Beam, 41½ feet. Draught, (max.) 10, (mean) 13½ feet. Length (over all), 446 feet.

Guns:

4—6 inch (Dir. Con.)

2—3 inch AA.

4—3 pdr.

2—2 pdr. pom-poms.

1 M.G.

8 Lewis.

Tubes:

4—21 inch above water
in 2 pairs.

Armour (H.T.):

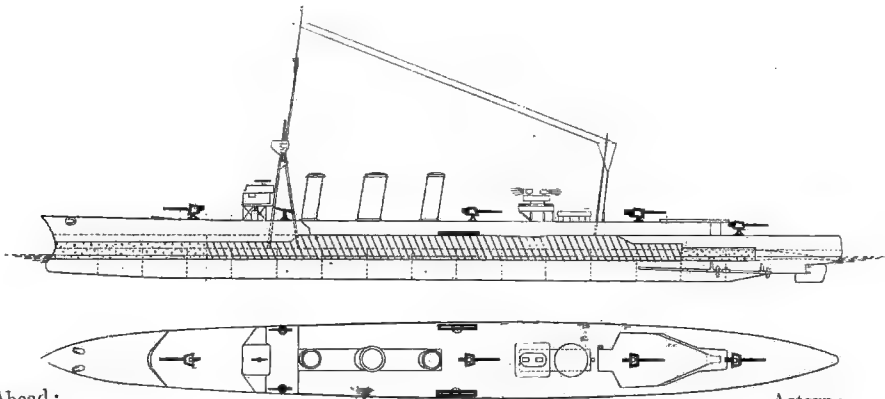
3" Side (amidships), 2¼"—1½"

forward, 2½"—2" aft, 1" Upper

Deck (amidships), 1" Deck over

rudder head. C.T. removed

from all.



Ahead:

1—6 in.

Broadside: 4—6 in., 2—21 in. tubes.

Astern:

2—6 in.

Machinery: Turbine: Parsons or Brown-Curtis. (See notes tabulated below).
Boilers: 8 Yarrow. Designed H.P. 40,000 = 29 kts. Fuel (oil only): normal, 482 tons;
maximum, 917 tons.

Name	Builder	Machinery	Laid down	Completed	Trials	Turbines	Boilers	Best recent speed
Carysfort	Pembroke	Hawthorn	Feb. '14	June '15	32,573 = 28.4	Brown-Curtis	Yarrow in all.	
Cleopatra	Devonport	Cammell-Laird	Feb. '14	June '15	31,280 =	Parsons		
Comus	Swan, Hunter	Wallsend	Nov. '13	May '15	32,736 =	Parsons 1 R.		

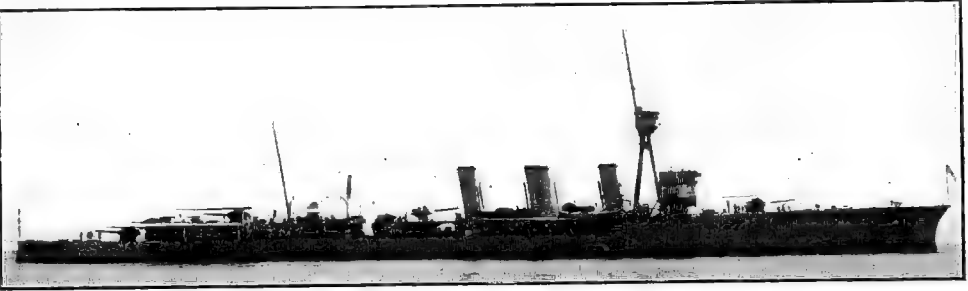
General Notes.—Belong to the 1913-14 Estimates. Originally had 2—6 inch and 8—4 inch; in 1916-17, 3—6 inch and 6—4 inch and tripod mast added; in 1918, 4—6 inch and no 4 inch. Much overloaded and roll badly, but very strongly built. Light Director on foretop. Conquest placed on disposal list, 1927. Caroline now a harbour drillship for R.N.V.R., at Belfast. Comus and Carysfort refitted 1925-26, Cleopatra, 1926-27.

CO ROFLIA.—



CLEOPATRA. Note guns before and abaft mainmast.

1921 Photo, Seward, Weymouth.



COMUS.

1927 Photo, R. Perkins, Esq.



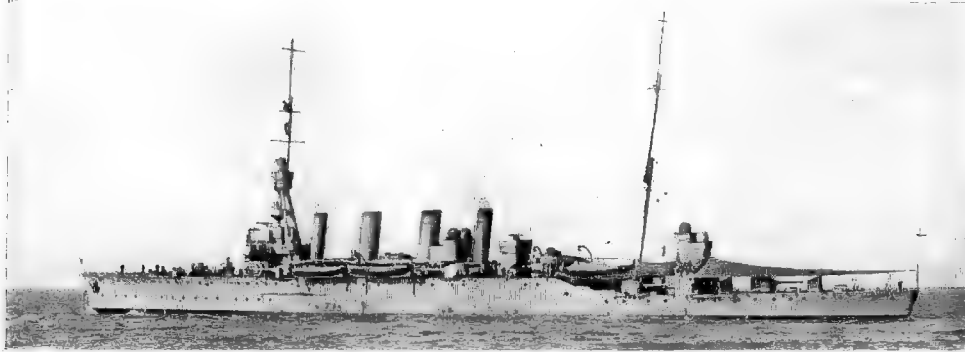
CARYSFORT.

1921 Photo, Allen & Gill, Plymouth.

1912 BRITISH CRUISERS. 1909

(Both to be discarded in near future.)

Cruisers—BRITISH



1921 Photo, Gieves, Ltd.

LOWESTOFT (April, 1913).

Displacement, 5440 tons. Complement, 530/542.

Length (p.p.), 430 feet. Beam, 49½ feet. { Mean draught, 15½ feet. } Length (over all), 457 feet.
 { Max. „ 17½ „ }

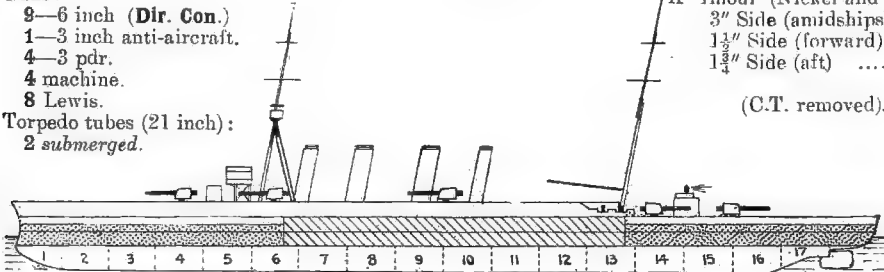
Guns:

- 9—6 inch (Dir. Con.)
- 1—3 inch anti-aircraft.
- 4—3 pdr.
- 4 machine.
- 8 Lewis.

Torpedo tubes (21 inch):
2 submerged.

- Armour (Nickel and H.T.):
- 3" Side (amidships)
- 1½" Side (forward)
- 1½" Side (aft)

(C.T. removed).



Ahead:
2 to 4—6 in.

Broadside: 5—6 in., 1—21 in. tube.

Astern:
3 to 5—6 in.

Machinery: Parsons turbine. Boilers: 12 Yarrow. Designed H.P. 25,000 = 25.5 kts.
 Coal: normal, tons; maximum, 1075 tons coal + 235 tons oil = 4680 miles at 10 kts.

Name	Builder	Machinery	Laid down	Completed	Trials: Full power.	Boilers	Best recent speed
Lowestoft	Chatham Y.	Fairfield	July, '12	Apr., '14	26,350 = 25.6	Yarrow	24

Belong to 1911 Estimates. Average cost, £356,768. Nottingham of this class sunk in the War, Birmingham and Chatham discarded since.

Armour Notes.—Vertical side plating from 2 ft. 7 in. below w.l. to (a) upper deck amidships, (b) 3 ft. below upper deck fore and aft. Armour is really 2" nickel amidships, 1" forward and aft, but side plating is added for total thicknesses given.

Machinery Notes.—Impulse reaction turbines, viz., on each shaft, one ahead impulse turbine plus an ahead reaction turbine, an impulse astern turbine and an astern reaction turbine.

Notes for all "Town" classes.—Heavy type Directors for 6-inch guns.

Large Refits 1919-20 and 1924-25: Lowestoft; 1924-26: Dartmouth.



1927 Photo, Cassar.

DARTMOUTH (Feb., 1911).

Displacement, 5250 tons. Complement, 459.

Length (p.p.), 430 feet. Beam, 48½ feet. { Mean draught, 15½ feet. } Length (over all), 453 feet.
 { Max. „ 17½ „ }

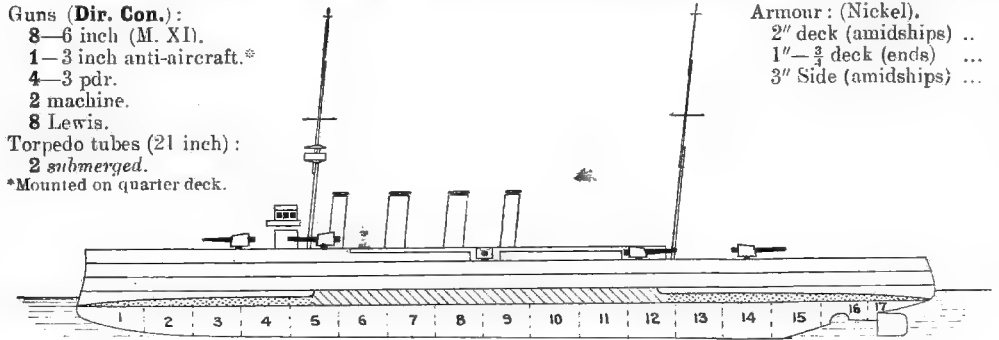
Guns (Dir. Con.):

- 8—6 inch (M. XI).
- 1—3 inch anti-aircraft.*
- 4—3 pdr.
- 2 machine.
- 8 Lewis.

Torpedo tubes (21 inch):
2 submerged.

*Mounted on quarter deck.

- Armour: (Nickel).
- 2" deck (amidships) ..
- 1" — ¾ deck (ends) ...
- 3" Side (amidships) ...



Ahead:
3—6 in.

Broadside: 5—6 inch, 1—21 inch tube.

Astern:
3—6 in.

Machinery: Parsons turbine (compound re-action), 4 screws. Boilers: 12 Yarrow. Designed H.P. 22,000 = 24.5 kts. Coal: normal 750 tons; maximum 1290 tons + 260 tons oil = 5600 miles at 10 kts.

Name	Builder	Machinery	Laid down	Completed	Trials: 30 hrs. at 3/4 8 hrs. full power	Boilers	Best recent speed
Dartmouth	Vickers	Vickers	Feb. '10	Oct. '11	18,839 = 24.95 23,467 = 25.90	Yarrow	23.24

General Notes.—This ship was built under 1909 Estimates. Average cost £393,363. Falmouth of this class sunk in the war. Weymouth placed on disposal list, 1927, Yarmouth, 1928.



EREBUS.

1929 Photo, R. Perkins, Esq.

EREBUS (19th June, 1916), **TERROR** (18th May, 1916).

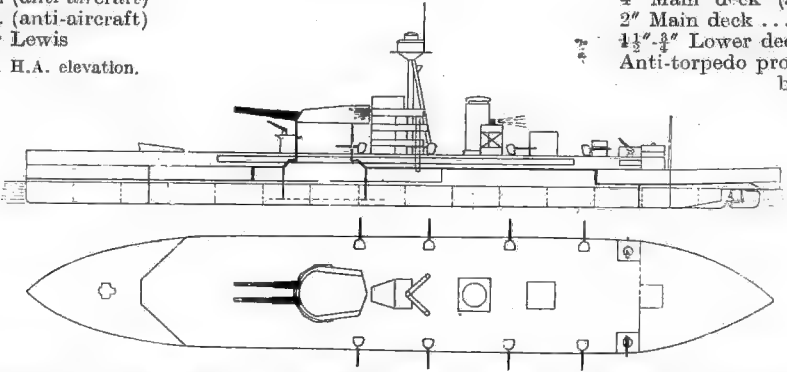
Displacement, 8000 tons. Complements, 300

Length, (p.p.) 380, (o.a.) 405 feet. Beam, 88 feet. Mean Draught, 11 feet.

- Guns :**
2—15 inch, 42 cal. (Dir. Con.)*
5—4 inch in *Terror*, 2 in *Erebus*.
2—3 inch (anti aircraft)
2—2 pdr. (anti-aircraft)
4 M.G. or Lewis
* and H.A. elevation.

Armour :
4" Bulkheads, F. & A.
8" Barbette
13"-4½" Gunhouse

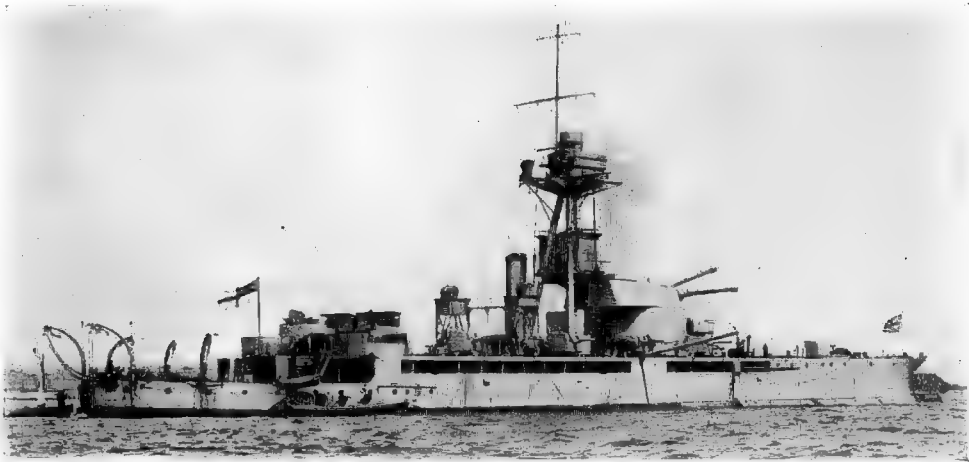
4" Box citadel (over magazines)
6" C.T.
1" Fo'xle & upper decks
4" Main deck (slopes)
2" Main deck
1½"-¾" Lower deck ..
Anti-torpedo pro. bulges.



Machinery : Triple expansion. 2 screws. Boilers : Babcock. Designed H.P. 6000=12 kts.
Fuel : 650 tons *normal*, 750 tons, *maximum*, oil only.
Gunnery Notes.—15 inch are high angle and can range up to 40,000 yards. Smoke screen apparatus fitted. *Erebus* has 15 inch removed from *M. Ney*.
Special Protection.—Bulges about 15 feet deep, sub-divided into 50 w.t.c.

Name	Builder and Machinery	Regun	Completed	Trials
<i>Erebus</i>	Harland & Wolff (Govan)	Oct., 1915	Sept., 1916	7244 H.P. = 14.1 kts.
<i>Terror</i>	Harland & Wolff (Belfast)	Oct., 1915	Aug., 1916	6235 H.P. = 13.1 kts.

General Notes.—Both Emergency War Programme. *Erebus* fitted out as Cadets' T.S., with extra cabin accommodation on upper deck, and other alterations.



MARSHAL SOULT.

1923 Photo, Abrahams, Devonport.

MARSHAL SOULT (17th June, 1915).

Displacement, 6670 tons.

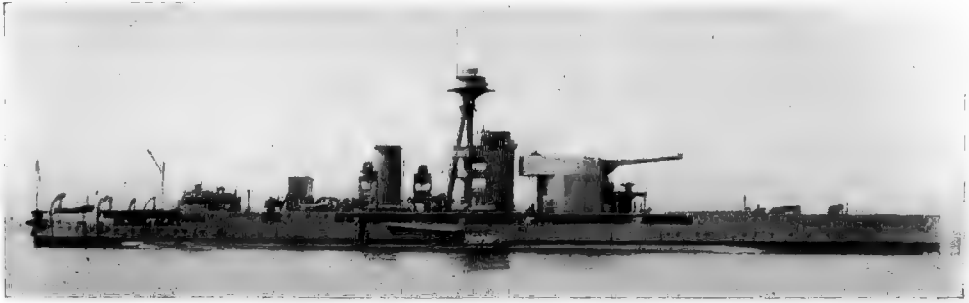
Complement, 228.

Length, 340 (p.p.), 355½ (o.a.) feet. Beam, 90½ feet. Draught, 10½ feet.

Guns : 2—15 inch (Dir. Con.), H. A. elevation, 8—4 inch, 2—3 inch AA., 2—2 pdr. AA., 4 Lewis (disposed similarly to *Erebus* and *Terror*). Armour : 8" Barbette, 13"—4½" Gunhouse; 4" Bulkheads fore and aft, 6" C.T., 4"—1" Box Citadel over Magazine, 1" Fo'xle Deck, 2"—1½" Upper Deck, Lower Deck 3" at bow, 1½" at stern, 1" Navig. Position. Deep bulge Protection.
Machinery : 2 sets Diesel. 4 screws. Designed H.P. 1500 = 6.7 kts. Fuel : 235 tons, *maximum* oil only.

Name	Builder	Machinery	Begun	Completed	Trials
<i>M. Soult</i>	Palmer	Vickers	Jan., 1915	Nov., 1915	1895 H.P. = 6.6 kts.

General Notes.—Emergency War Programme. Serves as Gunnery Training Ship at the Nore. Sister Ship *M. Ney* now Hulk *Vivid*, at Devonport.



TERROR.

1919 Photo.

BRITISH NAVY—DESTROYERS.

Leaders & Destroyers—BRITISH

142 (+ 18 building) Flotilla Leaders and Destroyers.

No. in Class.	Class Letter or Type.	First begun.	Last completed.	Displacements tons.	Designed } = kts. S.H.P. } speed.	Torpedo Tubes, No. and size.	Com- plement.
	17 Flotilla Leaders :—			S=standard.			
2	Codrington	1928	Bldg.	1520 s.	39,000=35/31	8—21 inch	..
7	Admiralty "Large Design"	1917	1919	1800	40,000=36.5/31	All 6—21 inch	All 183
5	Thornycroft (Shakespeare)	1916	1925	1750	40,000=36/31		
2	Grenville	1915	1916	1670	36,000=34/31	4—21 inch*	140
1	Abdiel	1914	1916	1608			
	143 Destroyers :—						
8	B	1929	Bldg.	..	..	..	..
8	Modified A	1928	Bldg.	1330 s.	34,000=35/32	8—21 inch	..
2	A	1924	1926	{ 1330 1210	{ 39,000=37/32 32,000=37/32	6—21 inch	138
2	Thornycroft Modified W	1918	1924	1350	30,000=35/32		
14	Admiralty Modified W	1918	1924	1325	27,000=34/31	6—21 inch	134
2	Thornycroft W	1917	1918	1325	30,000=35/32	6—21 inch	134
19	Admiralty W	1917	1918	1300	27,000=34/31	6—21 inch	
2	Thornycroft V	1916	1918	1325	30,000=35/32	6—21 inch	134
25	Admiralty V	1916	1918	1300/1325	27,000=34/31	6.5 or 4—21 inch	
2	Yarrow S	1917	1919	930	23,000=36/32	All 4—21 inch†	All 98
1	Thornycroft S	1917	1919	1075	29,000=36/32		
47	Admiralty S	1917	1924	1075	27,000=36/31	All 4—21 inch	All 98
1	Thornycroft R	1916	1917	1064	29,000=35/32		
1	Yarrow R	1915	1917	900	23,000=36/31		
9	Admiralty R	1915	1917	1065	27,000=36/31		

*Abdiel is a minelayer, and has no tubes. †In 3 "Admiralty S" boats, 2—18 inch extra.

Pendant Numbers.

The following is a list of Flotilla Leader and Destroyer Pendant Numbers, as officially communicated to *Fighting Ships* by the Admiralty :—

D Flag Superior.			
Pendants.	Ship.	Pendants.	Ship.
D, 00	Stuart.	D, 36	Vivacious. ✓
D, 01	Montrose.	D, 37	Vortigern. ✓
D, 02	Senator.	D, 38	Ambuscade. ✓
D, 03	Sepoy.	D, 39	Amazon. ✓
D, 04	Seraph.	D, 40	Spenser.
D, 05	Shark.	D, 41	Walpole.
D, 07	Somme.	D, 42	Windsor.
D, 08	Sparrowhawk.	D, 43	Wessex.
D, 10	Tourmaline.	D, 44	Valhalla. ✓
D, 11	Splendid.	D, 45	Westminster.
D, 12	Sportive.	D, 46	Winchelsea.
D, 14	Swallow.	D, 47	Westcott.
D, 16	Tribune. <i>Sketch</i>	D, 48	Vidette.
D, 17	Trinidad.	D, 49	Valentine.
D, 19	Malcolm.	D, 50	Shakespeare.
D, 20	Wallace.	D, 51	Vectis.
D, 21	Wryneck.	D, 52	Vega.
D, 22	Waterhen.	D, 53	Venetia.
D, 23	Vimiera.	D, 54	Vanquisher.
D, 24	Walrus.	D, 55	Vesper. ✓
D, 25	Warwick. ✓	D, 56	Wolfhound.
D, 26	Watchman. ✓	D, 57	Violent.
D, 27	Walker.	D, 58	Serapis.
D, 28	Vanity.	D, 59	Sirdar.
D, 29	Vanessa.	D, 60	Campbell.
D, 30	Whirlwind. <i>Sketch</i>	D, 61	Valkyrie.
D, 31	Voyager.	D, 62	Wild Swan. ✓
D, 32	Versatile. ✓	D, 63	Verity. ✓
D, 33	Vimy.	D, 64	Vansittart. ✓
D, 34	Velox. ✓	D, 66	Wivern.
D, 35	Wrestler.	D, 67	Wishart. ✓
H Flag Superior.			
H, 19	Seafire.	H, 28	Sturdy. ✓
H, 20	Searcher.	H, 29	Thanet.
H, 21	Scimitar.	H, 31	Sterling.
H, 22	Scythe.	H, 32	Abdiel.
H, 23	Seabear. <i>Sketch</i>	H, 33	Vanoc.
H, 24	Champlain, R.C.N.	H, 34	Turbulent.
H, 25	Serene.	H, 35	Sesame.
H, 26	Sardonyx.	H, 37	Steadfast.
H, 18	Sabre.	H, 38	Tilbury. <i>Sketch</i>

(Continued on following page.)

BRITISH—Leaders & Destroyers.

BRITISH NAVY—FLOTILLA LEADERS AND DESTROYERS.

Pendant Numbers.		H Flag Superior—continued.	
Pendants.	Ship.	Pendants.	Ship.
H, 39	Skate.	H, 71	Tempest.
H, 44	Trojan.	H, 72	Thisbe.
H, 46	Tyrant.	H, 73	Thruster.
H, 50	Stronghold.	H, 81	Torrid.
H, 51	Scout.	H, 82	Restless.
H, 52	Scotsman.	H, 85	Rowena.
H, 53	Simoom.	H, 88	Wakeful.
H, 54	Saladin.	H, 89	Tintagel.
H, 55	Vancouver, R.C.N.	H, 92	Tara.
H, 56	Trusty.	H, 95	Winchester.
H, 57	Spindrift.	H, 98	Truant.
H, 58	Salmon.	H, 99	Tactician.
H, 59	Tetrarch.	H, 3 Ans.	Anzac, R.A.N.

Note.—It should be borne in mind that Pendant Numbers are subject to frequent revision.

Funnel Markings.

The following revised scheme of Funnel Markings of Destroyer Flotillas was officially notified to take effect from April 4th, 1925 :—

- (a) Foremost funnel of leaders in Mediterranean and Atlantic Fleets will be marked with a 4ft. black band round the top.
- (b) Divisional commanders will have a 2ft. band three feet from the top of the foremost funnel, as follows :—Atlantic Fleet, white; Mediterranean Fleet, black.
- (c) After funnel in all vessels will be marked with bands as follows :—Mediterranean Fleet—1st Flotilla, one black; 2nd Flotilla, two black; 3rd Flotilla, three black; 4th Flotilla, no mark. Atlantic Fleet—5th Flotilla, one white; 6th Flotilla, two white.

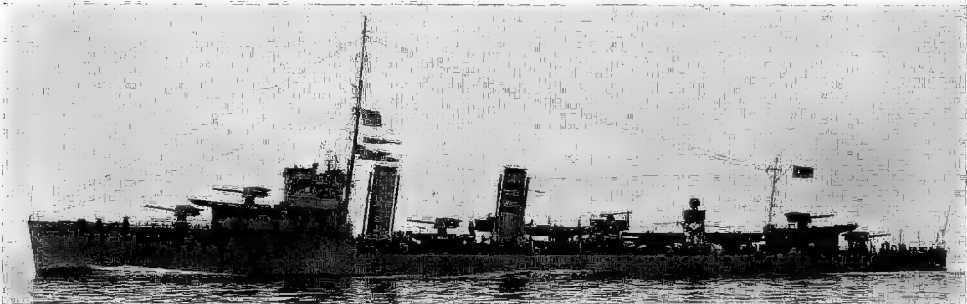
General Note to all Leaders and Destroyers.

Oil fuel is carried in two sets of tanks, now called (1) Main, (2) Auxiliary. Fuel storage given as 504/401 means 504 tons in main and auxiliary tanks combined; 401 tons in main tanks only.

Flotilla Leaders.
2 Codrington Type.

1 *Swan Hunter*: **Codrington** (Aug. 7th, 1929).
1 *Vickers-Armstrong*: **KEITH** (Laid down at Barrow, 1929).
Displacement: 1520 tons standard. 2000 tons full load. Dimensions: 332×33½× feet. Guns: 5—4.7 inch, 2—2 pdr. pom-pom, 5 M.G. Tubes: 8—21 inch on quadruple mounts. Machinery: Geared turbines. 2 screws. Designed S.H.P. 39,000=35 kts. Boilers: Yarrow (working pressure 300 lbs.) with superheaters. Oil fuel: tons.
Complement,
General Notes:—Authorized by 1927-28 and 1928-29 Estimates respectively. A third vessel of this type is projected under 1929-30 Estimates.

7 Admiralty Large Design. (Scott type.)

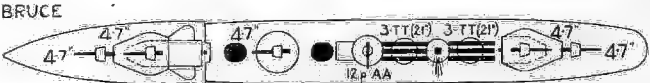


MAC KAY.

Photo, Gieves, Ltd. (28th September, 1929).

5 *Cammell Laird*: **Bruce, Campbell, Douglas, Mackay** (ex *Clasherhouse*), **Malcolm**.
2 *Hawthorn Leslie*: **Montrose, Stuart**.
Displacement: 1800 tons normal, up to 2053 tons on deep load. Dimensions: 320 (p.p.), 332½ (o.a.) × 31½ × 12½ feet (mean) draught. Guns: 5—4.7 inch B.L. (Dir. Con.), 1—3 inch AA, 2—2 pdr. AA, 1 M.G., 4 Lewis. Tubes: 8—21 inch, in two triple mountings. Machinery: Parsons (all-geared) turbines in Cammell-Laird boats; Brown-Curtis in Hawthorn-Leslie boats. Designed S.H.P. 40,000=36.5 kts.* Boilers: Yarrow. Oil fuel: 504/401 tons. Complement, 183.
*On trials, light load draught; on deep load, 31 kts. with same S.H.P.
General Notes.—Emergency War Programme boats. War Losses: *Scott* (Cammell Laird). Cancelled 1918: *Barrington, Hughes* (both Cammell Laird).
To Distinguish.—By 4.7 inch guns in 5 positions. Deep chart-house and bridges; thin funnels, equal in height. AA gun platform well abaft 2nd funnel. Variations are 2 or 3 yards on foremast and small topmast to mainmast in one or two boats.

	Begin.	Launch.	Comp.		Begin.	Launch.	Comp.
Bruce ..	12/5/17	26/2/18	29/5/18	Mackay ..	5/3/18	21/12/18	6/19
Campbell ..	10/11/17	21/9/18	21/12/18	Malcolm ..	27/3/18	29/5/19	14/12/19
Douglas ..	30/6/17	8/6/18	30/8/18	Montrose ..	4/10/17	10/6/18	14/9/18
				Stuart ..	18/10/17	22/8/18	21/12/18



General Notes to all destroyer Plans (British).

Triple tubes are diagrammatically shown as if mounted side by side on one level: actually the centre tube is above and between the other two.

5 Thornycroft Type (Shakespeare class).

SPENSER.

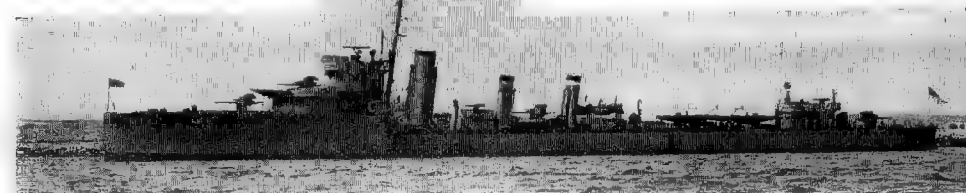
1920 Photo, Seward, Weymouth.

5 Thornycroft: **Broke** (ex-Rooke), **Keppel**, **Shakespeare**, **Spenser**, **Wallace**. Normal displacement: 1550 tons; full load, 1750 tons. Dimensions: 318½ (p.p.), 329 (o.a.) × 31 ft. 9 in. × 12½ feet (mean), 14½ (max.) draught. Guns: 5—4.7 inch B.L. (Dir. Con.), 1—3 inch AA, 2—2 pdr. pom-pom. 1 M.G., 4 Lewis. Tubes: 6—21 inch in 2 triple deck mountings.

Machinery: Brown-Curtis all geared turbines. Designed S.H.P. 40,000=36 kts. 2 screws. Boilers: Yarrow. Oil 550/250 tons (Keppel, 500/250). Complement, 183. Light load on trials; on deep load, same S.H.P. = 31 kts.

General Notes.—Built under War Emergency Programme. Appearance almost exactly same as *Bruce*, *Campbell*, &c., but these boats have the usual big, flat-sided Thornycroft funnels. No War Losses. Cancelled 1918: *Saunders*, *Spragge*. *Broke* was completed at Pembroke Dockyard, *Keppel* at Portsmouth and *Pembroke*. Plans as for *Bruce* on preceding page. Standard displacement is 1480 tons.

	Begun.	Launch.	Comp.	Trials.	Cost.
<i>Broke</i> ...	10/18	23/4/20	13/12/24	35.6 (mean) 38 (max.)	£409,394
<i>Keppel</i> ...	11/18	16/9/20	15/4/25	36.1 "	111,374
<i>Shakespeare</i> ...	10/16	7/7/17	10/17	38.74	
<i>Spenser</i> ...	10/16	22/9/17	12/17	37.76	
<i>Wallace</i> ...	8/17	26/10/18	2/19	37.72	

2 Kempfenfelt Type (Grenville class).

SAUMAREZ.

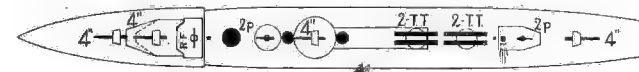
1921 Photo, Seward, Weymouth.

2 Cammell-Laird: **Grenville**, **Saumarez**. 1670 tons. Dimensions: 315 (p.p.), 325 (o.a.) × 31½ × 11 feet (mean), 12½ (max.) draught. Guns: 4—4 inch (Dir. Con.), 2—2 pdr. pom-pom. 1 M.G., 4 Lewis. Tubes: 4—21 inch in pairs. Machinery: Parsons turbines. 3 screws. Designed S.H.P. 36,000=34 kts. Boilers: Yarrow. Oil: 515/416 tons. Complement, 140.

General Notes.—All Emergency War Programme. Same hull design as *Abdiel*, but have only three funnels and super-firing 4 inch gun forward. Built, 1915-1916.

War Losses.—*Hoste* (Cammell Laird). Removals.—*Anzac* (Denny) presented to Australia, 1919. *Parker* and *Seymour* sold.

	Begun.	Launch.	Comp.
<i>Grenville</i> ...	19/6/15	17/6/16	11/10/16
<i>Saumarez</i> ...	2/3/16	14/10/16	21/12/16

**1 Kempfenfelt Type (Minelayer).**

ABDIEL.

1922 Photo.

1 Cammell-Laird: **Abdiel**. 1670 tons. Dimensions, H.P., speed, as other 2 ships of this class above. Parsons turbines. Armament: 3—4 in., 1—2 pdr. 1 M.G., 4 Lewis. Tubes: none. This boat is a mine-layer carrying about 60—70 mines from fourth funnel to stern. Complement, 128. Laid down May, 1915; Launched Oct., 1915. Completed March, 1916.

8 "B" Type (Beagle class).2 Clydebank: **BASILISK**, **BEAGLE**.2 Hawthorn Leslie: **BLANCHE**, **BOADICEA**.2 Palmers: **BOREAS**, **BRAZEN**.2 Swan Hunter: **BRILLIANT**, **BULLDOG**.

Building.

No official information available concerning these vessels, but it is not believed that they will differ greatly from Modified "A" type. All laid down 1929, under 1928-29 Estimates.

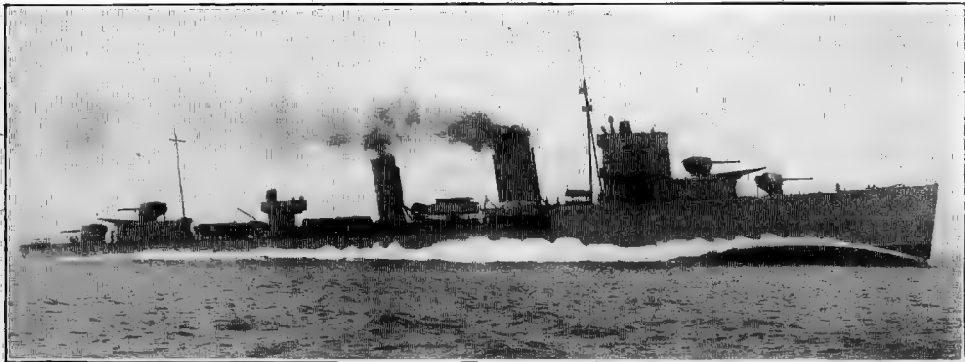
8 Modified "A" Type (Acasta class).2 Clydebank: **Acasta** (Aug. 7th, 1929), **Achates** (Oct. 4th, 1929).1 Thornycroft: **Acheron** (1930).2 Hawthorn Leslie: **Active** (July 9th, 1929), **Antelope** (July 27th, 1929).2 Scotts: **Anthony** (April 24th, 1929), **Ardent** (June 26th, 1929).1 Vickers-Armstrongs: **Arrow** (Aug. 22nd, 1929).

Displacement: 1330 tons. Dimensions: 312 (p.p.), 323 (o.a.) × 32½ × feet. Guns: 4—4.7 inch. 2—2 pdr. pom-pom. 5 M.G. Tubes: 8—21 inch on quadruple mounts. Machinery: Single reduction geared turbines. 2 screws. Designed S.H.P. 34,000=35 kts. Boilers: 3 Yarrow (working pressure 300 lbs.) with superheaters. Oil fuel: 880 tons. Complement,

General Notes.—All laid down 1928, under 1927-28 Estimates. Main features follow *Amazon* design.

BRITISH—Destroyers.

AMAZON.



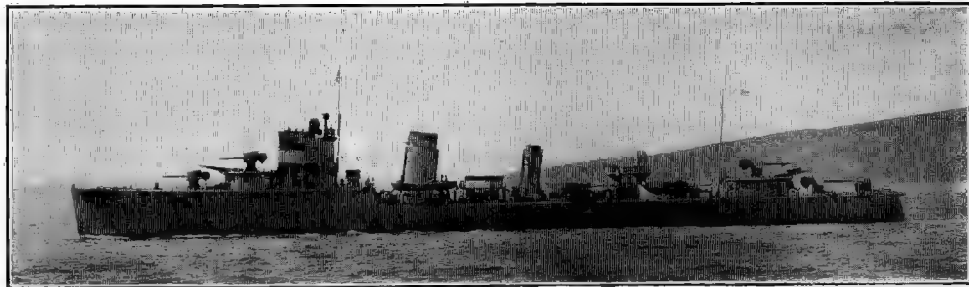
AMAZON.

1927 Photo, Messrs. Thornycroft (Builders).

- 1 Thornycroft: **Amazon** (Jan. 27th, 1926). Displacement: 1330 tons. Dimensions: $311\frac{1}{2} \times 31\frac{1}{2} \times 9\frac{1}{2}$ feet (mean draught).
1 Yarrow: **Ambuscade** (Jan. 15th, 1926). Displacement: 1210 tons. Dimensions: $307 \times 31 \times 8\frac{1}{2}$ feet (mean draught).

BRITISH NAVY—DESTROYERS.

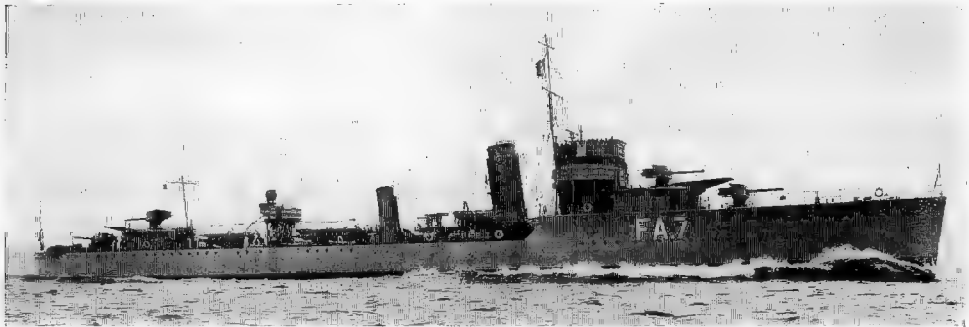
2 "A" Type.



AMBUSCADE.

1926 Photo, Messrs. Yarrow (Builders).

Guns: 4—4.7 inch, 2—2 pdr. pom-poms, 5 M.G. Tubes: 6—21 inch. in triple mounts. Machinery: Brown-Curtis turbines (all-geared type) H.P. and cruising; Parsons L.P. Boilers: Yarrow in both. Designed S.H.P. 39,500 (*Amazon*), 33,000 (*Ambuscade*)=87 kts. (made on trials). Superheated steam. Oil: *Amazon*, 433 tons; *Ambuscade*, 385 tons. Complement: 138.
Notes.—Built under 1924-25 Estimates. All-steel bridges, higher freeboard and improved cabin accommodation are principal features of this type, which has a larger radius of action than preceding classes. If necessary, induced ventilation can be supplied throughout the vessel, with a view to possible service in Tropics. *Ambuscade* laid down December 8th, 1924; *Amazon* in January, 1925. Both completed Sept., 1926. Cost: *Amazon*, £319,455; *Ambuscade* £326,616.



WHITSHED.

1919 Photo, Messrs. Swan Hunter (Builders).

7 BOATS, APPEARANCE AS ABOVE PHOTO:—

- 1 Clydebank: **Veteran**. 2 Swan-Hunter: **Whitshed, Wild Swan**.
4 White: **Witherington, Wivern, Wolverine, Worcester**.† (Completed by †Portsmouth D.Y.)
To distinguish.—Proportions of funnels reversed compared with other V's and W's. These boats have thick fore funnel and thin after funnel. No AA. guns abaft 2nd funnel. 2 pdr. pom-poms in echelon between funnels. White boats have plain S.L. tower without compass platform on fore side. *Witherington* and *Wivern*, only, have oval after funnel, built in sideways.

WOLVERINE



General Notes for both Types.

Displacement: 1325 tons average (1500 full load). Dimensions: 300 (p.p.), 312 (o.a.) $\times 29\frac{1}{2} \times 10\frac{1}{2}$ feet (mean) draught.
Guns: 4—4.7 inch (DIR. CON.), 2—2 pdr. pom-poms, 1 M.G., 4 Lewis. Tubes: 6—21 inch. in two triple mountings.
Machinery: Turbines (all-geared type)—all Brown-Curtis, but *Whitehall*, Parsons. Designed S.H.P. 27,000 = 34 kts.* 2 screws. Boilers: Yarrow, except *White* boats with White-Forster. Oil: 374-353/324-318 tons; *Whitehall*, 368/318. Complement, 134.
*Light load draught on trials; on deep load 31 kts. with same S.H.P.
Notes.—Begun under War Emergency Programme, 1918, cost of completion of all comes under post-war Estimates. Differ from preceding V's in armament. Sometimes—but unofficially—referred to as "Repeat W Class." None of these boats were finished till 1919.

	Begun.	Launch.	Comp.
<i>Veteran</i> ..	30/3/18	26/4/19	13/11/19
<i>Whitshed</i> ..	6/18	31/1/19	11/7/19
<i>Wild Swan</i> ..	7/18	17/5/19	14/11/19
<i>Witherington</i> ..	27/9/18	16/1/19	10/10/19
<i>Wivern</i> ..	19/8/18	16/4/19	23/12/19
<i>Wolverine</i> ..	8/10/18	17/7/19	27/7/20
<i>Worcester</i> ..	20/12/18	24/10/19	20/9/22

14 "Admiralty Modified W."



VERITY.

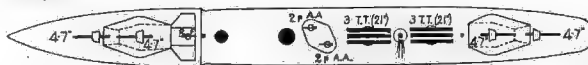
1920 Photo, Seward, Weymouth.

7 BOATS, APPEARANCE AS ABOVE PHOTO:—

- 1 Beardmore: **Vansittart**. 2 Clydebank: **Venomous** (ex *Venom*), **Verity**. 1 Denny: **Volunteer**.
1 Fairfield: **Wanderer**. 1 Swan Hunter: **Whitehall**. (Completed by Chatham D.Y.)
1 Yarrow: **Wren**. (Completed by Pembroke D.Y.)

To distinguish.—Difficult to distinguish from six tube V's. The short mainmast separates them from Admiralty W's. Only distinctive feature is the 2—2 pdr. AA. guns abaft after funnel, in echelon. *Vansittart*, *Wanderer*, have plain S.L. towers without compass platform on fore side. *Wren* has no caged caps to funnels and no compass platform forward of S.L. tower. *Volunteer* and *Whitehall*, no compass platform before S.L. tower.

WANDERER.



	Begun.	Launch.	Comp.
<i>Vansittart</i> ..	1/7/18	17/4/19	5/11/19
<i>Venomous</i> ..	31/5/18	21/12/18	6/19
<i>Verity</i> ..	17/5/18	19/3/19	17/9/19
<i>Volunteer</i> ..	16/4/18	17/4/19	7/11/19
<i>Wanderer</i> ..	1918	1/5/19	18/9/19
<i>Whitehall</i> ..	6/18	11/9/19	9/7/24
<i>Wren</i> ..	6/18	11/11/19	2/23

19 Admiralty "W"



WARWICK.

1924 Photo, Abrahams.

- 2 Beardmore: **Wakeful, Watchman.***
 2 Denny: **Walker,* Westcott.**
 2 Doxford: **Walpole, Whitley.**
 2 Fairfield: **Walrus, Wolfhound.**
 2 Hawthorn Leslie: **Warwick,* Wessex.**
 2 Palmer: **Waterhen, Wryneck.**
 2 Scott: **Westminster, Windsor.**
 1 Stephen: **Voyager.†**
 2 Swan Hunter: **Whirlwind,* Wrestler.**
 2 White: **Winchester, Winchelsea.**

* Fitted as Mine Layers during War, but not so used now. Still have funnels at stern.

† *Voyager* has always had 6 tubes and is not an "Admiralty V" re-armed.

Displacement: 1300 tons. Dimensions: 300 (p.p.), 312 (o.a.) × 29½ × 10 ft. 10 ins. (mean), 11½ (max.) draught. Guns: 4—4 inch (Mk. V Dir. Con.), 2—2 pdr. pom-poms, 1 M.G., 4 Lewis. Torpedo tubes: 6—21 inch in two triple deck mountings. Machinery: "All-Geared" turbines. Brown-Curtis in all except Palmer boats with Parsons. 2 screws. Designed S.H.P. 27,000=34 kts.* Boilers: 3 Yarrow, except White boats with White-Forster. Oil: about 368/322 tons. Complement, 134.

* Light load draught on trials; on deep load at 1480 tons, 31 kts. with same S.H.P.

General Notes.—All Emergency War Programme. The Notes to the Admiralty V's also apply to these boats. No War Losses.

To distinguish.—From Improved W's: 3 inch A.A. gun in handstand abaft 2nd funnel; from V's with 6 tubes: by higher mainmast: from *Vampire*: by shorter foremast, no extension to S.L. platform for standard compass, after mast stands away from after superstructure and is tall.

	Begun	Launch.	Comp.		Begun	Launch.	Comp.
Wakeful ..	17/1/17	6/10/17	11/17	Waterhen ..	7/17	26/3/18	17/7/18
Watchman ..	17/1/17	2/12/17	1/18	Wryneck ..	7/17	13/5/18	11/18
Walker ..	26/3/17	29/11/17	12/2/18	Westminster ..	4/17	24/2/18	18/4/18
Westcott ..	30/3/17	14/2/18	12/4/18	Windsor ..	4/17	21/6/18	28/8/18
Walpole ..	5/17	12/2/18	7/8/18	Voyager ..	17/5/17	8/5/18	24/6/18
Whitley ..	6/17	13/4/18	10/18	Whirlwind ..	5/17	15/12/17	3/18
Walrus ..	2/17	27/12/17	8/3/18	Wrestler ..	7/17	25/2/18	15/5/18
Wolfhound ..	4/17	14/3/18	27/4/18	Winchester ..	12/6/17	1/2/18	29/4/18
Warwick ..	10/3/17	28/12/17	18/3/18	Winchelsea ..	24/5/17	15/12/17	15/3/18
Wessex ..	23/5/17	12/3/18	11/5/18				

(Plans as for "6 tube V's" *Vanessa, Vanity*, &c., on next page.)

2 Thornycroft "W"



WOOLSTON

1919 Photo, Messrs. Thornycroft (Builders).

2 Thornycroft: **Wolsey, Woolston.** 1325 tons. Dimensions: 300 (p.p.), 312 (o.a.) × 30ft. 7in. × 10½ feet (mean draught). Guns: 4—4 inch (Mk. V. Dir. Con.), 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. Tubes: 6—21 inch in two triple deck mountings. Machinery: Brown Curtis turbines (all-geared type). 2 screws. Designed S.H.P. 30,000 = 35 kts.* Yarrow boilers. Oil: 374/322 tons. Complement, 134.

* Light load draught on trials; on deep load at 1512 tons, 31 kts. with same S.H.P.

General Notes.—Emergency War Programme. Differ from other Admiralty W's in H.P., speed, and a few other particulars. No War Losses. Plans as "6-tube V's" on next page.

To distinguish.—Big flat-sided after funnel. Fore funnel does not look so prominently raised, owing to extra height of after funnel. Hulls stand high out of water.

	Begun.	Launch.	Comp.	Trials.		Begun.	Launch.	Comp.	Trials.
Wolsey	3/17	16/3/18	14/5/18	36.64	Woolston	4/17	27/1/18	28/6/18	37.11

2 Thornycroft "Modified W" Type.



WISHART.

1921 Photo, Hopkins, Southsea.

2 Thornycroft: **Wishart, Witch.** 1350 tons normal (1550 full load). Dimensions: 300 (p.p.), 312 (o.a.) × 30 ft. 7 in. × 10 feet. 11 ins. Guns: 4—4.7 inch (Dir. Con.), 2—2 pdr. pom-poms, 1 M.G., 4 Lewis. Torpedo tubes: 6—21 inch in two triples. Machinery: Brown-Curtis turbines (all-geared type). 2 screws. Boilers: 3 Yarrow. Designed S.H.P. 30,000 = 35 kts. (light load draught on trials) and 32 kts. (deep load). Oil fuel: 374/322 tons. Complement, 134.

General Notes.—Began under Emergency War Programme. Differ from Admiralty "Modified W's" in dimensions, H.P., speed and a few other details.

To distinguish.—Big, flat-sided fore funnel, set well aft of bridges, both funnels nearly equal in height. High mainmast. These T.B.D. stand high out of water.

	Begun.	Launch.	Comp.
Wishart ..	6/18	13/7/19	6/20
Witch ..	6/18	11/11/19	3/24†

† *Witch* completed by Devonport D.Y.

(Plans generally as for *Wolcerine* on preceding page.)

25 Admiralty "V."



VIVACIOUS.

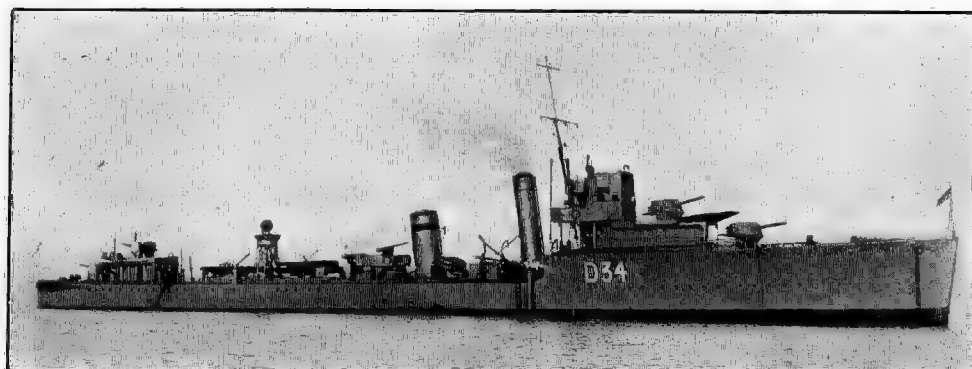
1922 Photo, Gieves, Ltd.

2 Beardmore: **Vanessa, Vanity.**1 Doxford: **Vega.**2 Fairfield: **Vendetta, Venetia.**1 Hawthorn Leslie: **Verdun.**2 Stephen: **Vidette, Vesper.***2 Swan Hunter: **Violent, Vimiera.**2 White: **Vectis, Vampire.**2 Yarrow: **Vivien, Vivacious.**3 Denny: **Valorous,* Valkyrie, Venturous.**1 Clydebank: **Vanquisher.**2 Cammell-Laird: **Valhalla, Valentine.**

All above boats have 6—21 inch tubes in 2 triple deck mountings (1920 alteration), except *Vivien*, whose tubes have been removed temporarily, for experimental purposes. Otherwise as General Notes.

To distinguish.—Identical now with "Admiralty W" boats, but have short mainmasts (except *Vanquisher*, *Vampire*, *Venturous*, *Valorous*, which have high mainmast, the "W" class, from which they are practically indistinguishable in appearance.)

*Probably still retain minelaying chutes at stern.

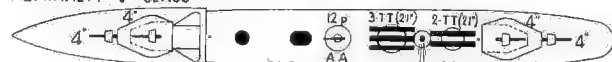
ADMIRALTY "W" CLASS.
V LEADERS & SIX TUBE VS

VELOX.

1925 Photo, Abrahams, Devonport.

1 Beardmore: **Vimy** (ex *Vancouver*)*1 Doxford: **Velox.***1 Hawthorn Leslie: **Versatile.***1 White: **Vortigern.***

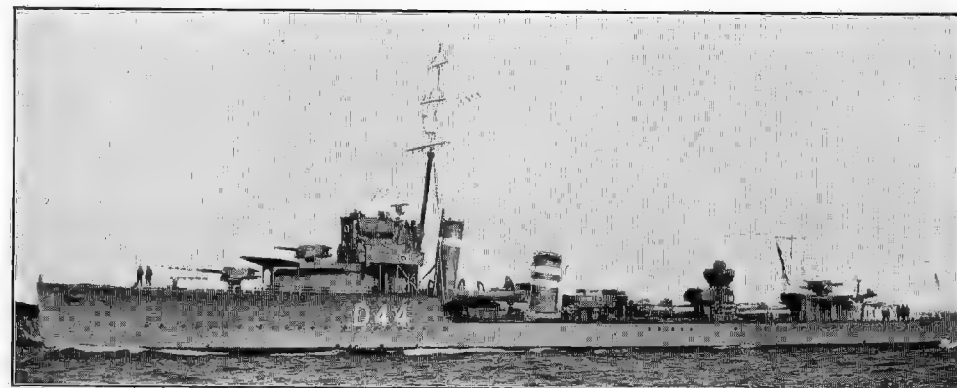
ADMIRALTY "V" CLASS



All above have five 21 inch tubes in one triple (forward) and one double (after) deck mountings (1920 alteration). All fitted as Mine Layers during War, but not so used; some retain chutes at stern. Otherwise as General Notes.

To distinguish.—The mixed T.T. mountings are special to these boats, and render them distinctive.

*5th Flotilla, Atlantic Fleet, fitted for Mine-laying.



VALHALLA.

1929 Photo, Abrahams, Devonport.

1 Clydebank: **Vanoc.**

ADMIRALTY "V" CLASS



All excepting *Vanoc* are now fitted with triple tubes.

Vanoc has special arrangement of tubes for experimental purposes.

Special Note.—*Vampire*, *Valorous*, *Valhalla*, *Valkyrie*, *Valentine*, are fitted as Flotilla Leaders, having been originally designed and classed as such. Internal arrangements of these 5 differ from rest of class.

General Notes.

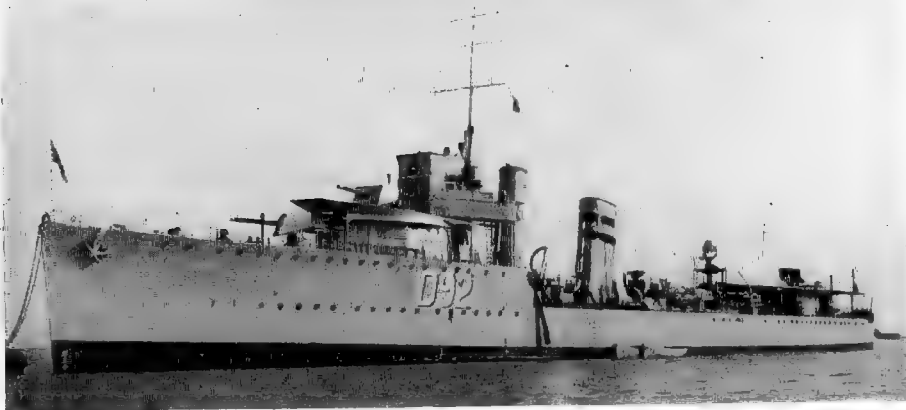
Displacements: 1300 tons (the five fitted as Leaders being 1925) normal, (1480 deep load). Dimensions: 300 (p.p.), 312 (o.a.) × about 29½ × 10 ft. 10 in. (mean), 11½ (max.) draught. Guns: 4—4 inch (Mk. V. DIR. CON.), 1—2 pdr. pom-pom. 1 M.G., 4 Lewis. Torpedo tubes: As noted above. Machinery: "All-Geared" turbines: Brown-Curtis in all, except Doxford, Swan-Hunter and Laird boats with Parsons. 2 screws. Designed S.H.P. 27,000 = 34 kts. (light load draught on trials) = 31 kts. (deep load draught). Boilers: 3 Yarrow in all, except White boats with White-Forster. Weight of machinery: 425 tons. Oil: 360/320 tons. Feed water: 20 tons + 7 for drinking. Complement, 134. Trials: *Vivacious* 33.01, *Vivien* 36.79.

All Emergency War Programme. These boats are of remarkable size and power for Destroyers.

	Begun.	Launch.	Comp.		Begun.	Launch.	Comp.
<i>Vimy</i>	15/3/17	28/12/17	9/3/18	<i>Vendetta</i>	1916	3/9/17	17/10/17
<i>Vanessa</i>	16/5/17	16/3/18	27/4/18	<i>Venetia</i>	1917	29/10/17	19/12/17
<i>Vanity</i>	28/7/17	3/5/18	21/6/18	<i>Verdun</i>	13/1/17	21/8/17	3/11/17
<i>Vanoc</i>	20/9/16	14/6/17	8/17	<i>Versatile</i>	31/1/17	31/10/17	11/2/18
<i>Vanquisher</i>	27/9/16	18/8/17	10/17	<i>Vesper</i>	27/12/16	15/12/17	20/2/18
<i>Venturous</i>	9/10/16	21/9/17	29/11/17	<i>Vidette</i>	1/2/17	28/2/18	27/4/18
<i>Vega</i>	1916	1/9/17	12/17	<i>Violent</i>	11/16	1/9/17	11/17
<i>Velox</i>	1/17	17/11/17	1/4/18	<i>Vimiera</i>	10/16	22/6/17	10/17
<i>Valentine</i>	7/8/16	24/3/17	27/6/17	<i>Vectis</i>	7/12/16	4/9/17	5/12/18
<i>Valhalla</i>	8/8/16	22/5/17	31/7/17	<i>Vortigern</i>	17/1/16	15/10/17	26/1/18
<i>Valkyrie</i>	25/5/16	13/3/17	16/6/17½	<i>Vivacious</i>	7/16	3/11/17	12/17
<i>Valorous</i>	25/5/16	8/5/17	21/8/17	<i>Vivien</i>	7/16	16/2/18	28/5/18
<i>Vampire</i>	10/10/16	21/5/17	22/9/17				

War Losses.—*Vehement* (Denny). *Verulam* (Hawthorn Leslie) and *Vittoria* (Swan Hunter) lost 1919 in Baltic operations. *Valkyrie* mined during war and had to be almost entirely rebuilt at Chatham D.Y.

2 Thornycroft "V."



VISCOUNT.

Photo added 1923.

2 Thornycroft: **Viceroy**,† **Viscount**. 1325 tons. Dimensions: 300 (p.p.), 312 (o.a.) × 30' 7" × 10½ feet (mean) 11½ feet (max.) draught. Guns: 4—4 inch (Mk. V DIR. CON.), 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. Tubes: 6—21 inch in 2 triple deck mountings. Machinery: Brown Curtis (all-geared) turbines. 2 screws. Designed S.H.P. 30,000 = 35 kts.* Boilers: 3 Yarrow. Oil fuel: 374/322 tons. Complement, 134.

* Light load draught on trials; on deep load at 1512 tons, 31 kts. with same S.H.P.

General Notes.—Emergency War Programme boats. Differ from Admiralty V design in dimensions, H.P. and speed. No War Losses.

To distinguish.—As Notes to *Wolsey* and *Woolston*, except in height of mainmast, which is short, in these two boats.

	Begun.	Launch.	Comp.	Trial.
<i>Viscount</i>	12/16	29/12/17	3/18	37.69
<i>Viceroy</i>	12/16	17/11/17	1/18	36.5

(Plans as "6 tube V's" on preceding page.) † H.S. Swears.

2 "Yarrow S."



1920 Photo, Lieut. Noakes, R.N.

2 Yarrow: **Turquoise**, **Tuscan**. Displacement, 930 tons. Dimensions: 260½ (p.p.), 273½ (o.a.) × 25½ × 9½ feet (mean) draught. Guns: 3—4 inch (Mk. IV DIR. CON. with 30° elevation), 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. Tubes: 4—21 inch in pairs. Machinery: Brown-Curtis (direct drive) turbines. Designed S.H.P. 23,000 = 36 kts.* Boilers: Yarrow. Oil fuel: 256/215 tons. Complement, 98.

* On light load draught; on deep load, 32 kts. with same S.H.P.

General Notes.—Emergency War Programme boats. Otherwise as "General Notes" to Admiralty S boats. *Tryphon* wrecked on Mudros, 1919, salvaged and towed to Malta; placed on Sale List, 1920. *Tomahawk*, *Torch*, *Tumult*, disposed of 1928. *Tyrian*, 1929.

To distinguish.—From Admiralty and Thornycroft S: thick fore funnel, sloping Yarrow stern. From other types: as Distinction Notes for Admiralty S boats. No War Losses.

	Begun.	Launch.	Comp.	Trial.	Begun.	Launch.	Comp.	Trial.
<i>Turquoise</i> ..	6/17	9/11/18	3/19	39.6	<i>Tuscan</i> ..	6/17	1/3/19	24/6/19

(Plan as "Admiralty S" type.)

* Trials run on 1060 tons load displacement.

1 Thornycroft "S."



1919 Photo, Messrs. Thornycroft (Builders).

1 Thornycroft: **Tourmaline**. 1075 tons. Length: 266½ (p.p.), 275½ (o.a.) × 27ft. 5in. × 10 ft. 5 in. (mean) draught. Guns: 3—4 inch (Mk. IV DIR. CON. with 30° elevation), 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. Tubes: 4—21 inch in pairs. Machinery: Brown-Curtis (all-geared) turbines. 2 screws. Designed S.H.P. 20,000 = 36 kts.* Boilers: Yarrow. Oil: 297/248 tons. Complement, 98.

* On light load draught: on deep load, 32 kts. with same S.H.P.

General Notes.—Emergency War Programme boats; otherwise as "General Notes" to Admiralty S Class. Designed with 2—18 inch tubes on racks athwartships under bridges, for purpose explained in notes to "Admiralty S" boats; these 18 inch tubes now removed. No War losses. *Tobago* mined in Black Sea, 12/11/20, but brought back to port and deleted from list, 1922. *Speedy* lost in collision, Sea of Marmora, 23 Sept., 1922. *Torbay* and *Toreador* transferred to R. Canadian Navy and renamed *Champlain* and *Vancouver*, 1928.

To distinguish.—From Admiralty S and Yarrow S: note that fore 4 inch is raised; funnels of equal height; stand higher out of water. From other classes, distinction notes as for Admiralty S boats.

	Begun.	Launch.	Comp.	Trial.
<i>Tourmaline</i>	1/18	12/4/19	12/19	.....

(Plan as "Admiralty S" type.)



TURQUOISE.

Photo added 1925.

BRITISH—Destroyers.

BRITISH NAVY—DESTROYERS.

47 Admiralty "S."

- 2 Beardmore: Tactician, Tara.
- 9 Clydebank: Scimitar, Scotsman, Scout, Scythe, Seabear, Seafire, Searcher, Seawolf, Simoom.
- 6 Denny: Senator, Sepoy, Seraph, Serapis, Serene, Sesame.
- 2 Doxford: Shamrock, Shikari.*
- 3 Fairfield: Sirdar, Somme, Spindrift.
- 4 Hawthorn Leslie: Tenedos, Thanet, Thracian,† Turbulent.
- 3 Palmer: Steadfast, Sterling, Stormcloud.
- 4 Scott: Strenuous, Stronghold, Sturdy, Swallow.
- 3 Stephen: Sabre, Saladin, Sardonyx.
- 6 Swan Hunter: Shark, Sparrowhawk, Splendid, Sportive, Tilbury, Tintagel.
- 5 White: Tribune, Trinidad, Trojan, Truant, Trusty.

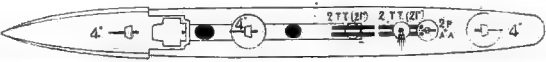
*Completed by Chatham D.Y. and †by Sheerness D.Y.

1075 tons. Dimensions: 265 (p.p.), 276 (o.a.) × 26½ × 10½ feet (mean) draught. Guns: 3—4 inch (Mk. IV DIR. Cox. with 30° elevation), 1—2 pdr. pom-pom 1 M.G., 4 Lewis. Tubes: 4—21 inch in pairs.° (See Notes). Machinery: Turbines (all-gear type). Brown-Curtis (A.G.) in all except following:—Palmer boats, Parsons (A.G.); Tilbury, Tintagel, Parsons (A.G.). Designed S.H.P. 27,000 = 36 kts. 2 screws. 3 Yarrow boilers in all, except White boats with White-Forster. Oil: 301/254 tons. Complement, 98.

*Tara, Trojan, Tintagel have also 2—18 inch single T.T. to P. and S. under charthouse, for instructional purposes.

General Notes.—Emergency War Programme boats, but cost of completion of about 45 boats included in post-war Estimates. Design derived from "Admiralty Modified R" boats. Reported to be not quite so successful as the Admiralty R's. They are wet with sea on beam or bow; they ride well in head seas, but throw spray over bridges. Bows not strengthened for submarine attack by ramming. No War losses. Saturn, Sycamore (both Stephen) cancelled. Stalwart, Success, Swordsman, Talloo, Tasmania, presented to Royal Australian Navy, 1918. Stonehenge wrecked, 1920. Sikh and Spear sold.

To distinguish.—Long fo'xle, sheered and slightly turtle-backed. Funnels about equal in height, the extra height of fore funnel not being very prominent. Wedge-shaped bridges built off fo'xle. Features in these boats which also appear in the Modified R types are:—Mounting of searchlight on after pair of tubes; pom-pom on platform just before mainmast; after 4 inch in bandstand; boats ahead of 2nd funnel. As the openings under forebridges can be screened in, they are not a reliable identification feature. Shikari has had W/T. deckhouse erected in place of gun between funnels and carries a much reduced armament. Senator and Sepoy have very big flat-sided funnels. Truant has had after gun removed. Thanet fitted with catapult for experimental purposes.



TILBURY. 1920 Photo, J. Spartaki, Esq., Smyrna.



SPINDRIFT.				1924 Photo, Abrahams.						
		Begin.	Launch.	Comp.		Begin.	Launch.	Comp.		
2 B more	Tactician	21/11/17	7/8/18	23/10/18	4 H. L.	Tenedos	6/12/17	21/10/18	6/19	
	Tara	21/11/17	12/10/18	9/12/18		Thanet	13/12/17	5/11/18	30/8/19	
	Scimitar	30/5/17	27/2/18	13/4/18		Thracian	10/1/18	5/3/20	1/4/22	
	Scotsman	10/12/17	30/3/18	21/5/18		Turbulent	14/11/17	29/5/19	10/10/19	
	9 Clydebank	Scout	25/10/17	27/4/18	15/6/18	3 Palmer	Steelfast	9/17	8/8/18	3/19
		Scythe	14/1/18	25/5/18	8/7/18		Sterling	10/17	8/10/18	5/19
		Seabear	13/12/17	6/7/18	7/9/18		Stormcloud	5/18	30/5/19	28/1/20
		Seafire	27/2/18	10/8/18	10/18		Strenuous	3/18	9/11/18	1/19
		Searcher	30/3/18	11/9/18	11/18	Stronghold	3/18	6/5/19	2/7/19	
		Seawolf	30/4/18	2/11/18	1/19	Sturdy	4/18	25/6/19	10/19	
Simoom		30/5/17	26/1/18	3/18	Swallow	9/17	1/8/18	27/9/18		
6 Denny		Senator	10/7/17	7/4/18	7/6/18	3 Stephen	Sabre	10/9/17	23/9/18	9/11/18
		Sepoy	6/8/17	22/5/18	6/8/18		Saladin	10/9/17	17/2/19	11/4/19
		Seraph	4/10/17	8/7/18	25/12/18		Sardonyx	25/3/18	27/5/19	12/7/19
	Serapis	4/12/17	17/9/18	21/3/19	6 S. H.	Shark	9/17	9/4/18	10/7/18	
	Serene	2/2/18	30/11/18	5/19		Sparrowhawk	9/17	14/5/18	4/9/18	
	Sesame	13/3/18	30/12/18	28/3/19		Splendid	9/17	10/7/18	10/18	
2 Doxford	Shamrock	11/17	26/8/18	16/9/19	5 White	Sportive	2/18	19/9/18	12/18	
	Shikari	15/1/18	14/7/19	3/24		Tilbury	11/17	13/6/18	17/9/18	
3 Fairfield	Sirdar	8/17	6/7/18	6/9/18		5 White	Tintagel	12/17	9/8/18	12/18
	Somme	11/17	10/9/18	4/11/18	Tribune		21/3/17	28/3/18	18/7/18	
	Spindrift	4/18	30/12/18	3/19	Trinidad		15/9/17	8/4/18	9/9/18	
						Trojan	3/1/18	20/7/18	6/12/18	
						Truant	14/2/18	18/9/18	17/3/19	
						Trusty	11/4/18	6/11/18	9/5/19	

BRITISH NAVY—DESTROYERS.

Destroyers.—BRITISH

9 "Admiralty R."



ROWENA. (Note stump W.T. mast.)

1927 Photo, R. Perkins, Esq.

3 Clydebank: **Restless, Rowena, Skate.**

1 Fairfield: **Tempest.**

2 Harland & Wolff (Govan): **Salmon, Tetrarch.**

2 Hawthorn Leslie: **Thisbe, Thruster.**

1 Swan Hunter: **Torrid.**

Displacements vary from 1096 to 1036 tons (1065 average). Length (p.p.), 265 feet (o.a. varies from 274 to 276 feet). Beam, 26½ feet. Mean draught, 10½ feet. Max. draughts, 11½ to 15 feet. Guns: 3—4 inch (Dir. Con.), 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. Torpedo tubes: 4—21 inch in pairs. Machinery: Turbines—"all-geared" types. Clydebank, Fairfield, Harland & Wolff, Swan Hunter, boats, Brown-Curtis A.G. turbines; Hawthorn Leslie boats, Parsons A.G. turbines. Designed S.H.P. 27,000=36 kts. 2 screws in all. Boilers: 3 Yarrow or Modified Yarrow. Oil fuel: 301-285/258-243 tons. Complement, 98.

	Begun.	Launch.	Comp.		Begun.	Launch.	Comp.
Clydebank:				H. & W.			
Restless ..	22/9/15	12/8/16	10/16	Salmon ..	27/8/15	7/10/16	20/12/16
Rowena ..	25/8/15	1/7/16	9/16	Tetrarch ..	26/7/16	20/4/17	2/6/17
Skate ..	12/1/16	11/1/17	2/17				
(Fairfield) Tempest ..	1916	26/1/17	20/3/17	H. L.			
				Thisbe ..	13/6/16	8/3/17	6/6/17
				Thruster ..	2/6/16	10/1/17	30/3/17
				(S. H.) Torrid ..	7/16	10/2/17	5/17

Appearance Notes.—Skate, Restless, mainmast for Poulsen W/T. Salmon has S.L. platform just abaft after funnel. Rowena has very short mainmast stepped abaft pom-pom platform and no after control. Thisbe, Thruster have no funnel caps. Torrid has had her forward 4 inch gun removed; Tetrarch her after one, together with its platform. Restless has had tubes removed temporarily.

General Notes.—All Emergency War Programme boats. In Reserve or attached to Training Establishments. Tetrarch fitted for target towing, with towing winch in place of after 4 inch.

Engineering Notes.—Propeller revolutions, 350; about 3,000 R.P.M. in H.P., and 2,300 R.P.M. in L.P. Each set of turbines—one H.P. and one L.P. driving common gear wheel on propeller shaft. Cruising turbine replaced by extra stage in H.P. turbine which is by-passed at full speed, an arrangement which has worked very successfully. Boiler pressure, 250 lbs. per sq. in. Furnaces=24,700 sq. ft. heating surfaces.

War Losses.—Simoom (Clydebank). Recruit (Doxford), Tornado (Stephen), Torrent (Swan Hunter), Setter (White).

Sold.—Rigorous, Rob Roy, Rocket, Redoubt, Skilful, Springbok, Sylph, Sarpedon, Sceptre, Sturgeon, Satyr, Sharpshooter. Tarpon, Telemachus, Redgauntlet, Stork, Radstock, Raider, Sorceress, Sable, Tanager, Tenacious, Starfish, Romola, Tormentor.

ADMIRALTY "R" CLASS



1 "Thornycroft R."



TEAZER.

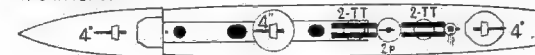
1918 Photo.

1 Thornycroft: **Teazer.** 1064 tons. Dimensions: 276½ (o.a.) × 27 × 11 ft. (max.) draught. Length (p.p.), 265 feet. Mean draught, 10½–10½ feet. Guns: 3—4 inch (Dir. Con.), 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. Tubes: 4—21 inch, in pairs. Machinery: Brown-Curtis (all-geared) turbines. 2 screws. Designed S.H.P. 29,000=35 kts. Boilers: 4 Yarrow. Oil fuel: about 285/220 tons. Complement, 98.

General Notes.—War Emergency Programme. No War Losses. Radiant of this class now Siamese Phra Ruang. Rosalind and Retriever sold, 1926; Taurus, 1929. Proposed disposal of Teazer was countermanded, it being found she could still make her trial speed.

	Begun.	Launch.	Comp.	Trials.
Teazer ..	3/16	21/4/17	5/17	49.22

THORNYCROFT "R"



1 Yarrow "R." ("Later M.")

Photo, Gieves, Ltd. (22/6/20).

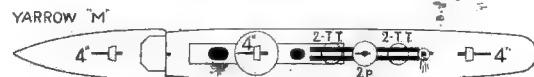
1 Yarrow: *Tyrant*. Displacement: 900 tons. Dimensions: 269½ (p.p.), 271½ (o.a.) × 25½ × 9 ft. 7 in. (mean), 10½ (max.) draught. Guns: 3—4 inch (Dir. Cox.), 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. Torpedo tubes: 4—21 inch, in pairs. Machinery: Brown-Curtis turbines. 2 screws. Designed S.H.P. 23,000 = 36 kts. Boilers: 3—Yarrow. Oil fuel: 256-228/215-202 tons. Complement, 98.

General Notes.—Emergency War Programme. Has no geared turbines, nor is the after 4 inch in a handstand. Accordingly, though officially styled "Yarrow R." more correctly and usually referred to as "Later M" type. *Relentless, Rival, Sybille, Sabrina and Truculent* disposed of 1926. *Tyrant* has had guns and tubes removed while attached to *Fisgard* training establishment.

War Losses.—*Strongbow Surprise, Ulleswater* (all Yarrow).

	Begun.	Launch.	Comp.	Trials.*
<i>Tyrant</i>	3/16	19/5/17	7/17	37.37

*Displacement on trial, 1050 tons.

**3 P-Boats (Patrol Boats).**

(All have foretopmast now.)

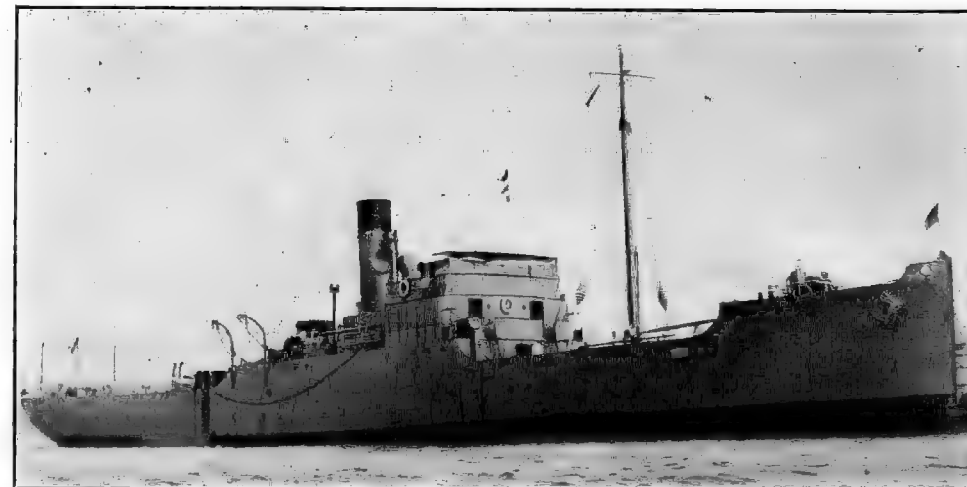
1919 Photo, Robertson, Gourock.

1 Hamilton: *Spey* (ex P 33) (1917).

2 White (Coves): *P40*, (1916), *P59* (1917).

Displacement: 613 tons. Dimensions: 230 (p.p.), 244½ (o.a.) × 23½ × 7 feet 11 inches. Guns: Designed to mount 2—4 inch but guns mounted are 1—4 inch and 1—2 pdr. pom-pom. Tubes: Originally 2 single 14 inch, removed from old Torpedo Boats and fixed on quarters, but removed from nearly all boats and replaced by rails and 30 D.C. Machinery: Brown-Curtis or Parsons geared turbines. 2 screws. Yarrow boilers (White-Forster in *White* boats). Designed S.H.P. 3500 = 20 kts. Oil fuel: normal 50 tons, max. 93 tons. Complement, 56.

General Notes.—All built under Emergency War Programme. Were designed to relieve destroyers of patrol and escort work and submarine hunting. Outline scheme for these boats stipulated; minimum size consistent with sea-keeping qualities, simplicity of construction, and adequate speed to run down submarines; also shallow draught: low upperworks to reduce visibility; and economy of fuel. Built of mild steel, but with hard steel stem for ramming submarines. Large rudder area and hull strongly cut up aft to give rapid turning. Proved very useful boats and an excellent anti-submarine type in all weathers. Could do 23 kts. when new. *Spey* so named when selected for Fishery Protection Duty, 1924.

2 P.C. Boats (Converted Patrol Boats).

DART.

1926 Photo, Abrahams & Sons, Devonport.

2 White: *P.C. 74* (1918). *Dart* (ex *P.C. 73*) (1918).

Dimensions: 694 tons: 233 (p.p.), 247 (o.a.) × 26½ × 8 feet. Guns: 1—4 inch, 2—12 pdr. Torpedo tubes: removed.

Carry 24-30 D.C. Machinery: Parsons or Brown-Curtis geared turbines. Boilers: White-Forster. 2 screws. Designed S.H.P. 3,500 = 20 kts. Oil: 164 tons max. Complement, 56.

General Notes.—Built under Emergency War Programme. Design as P-boats, but converted or modified while building, to act as Submarine Decoy Vessel or "Q-boat." The after 4 inch gun was hidden behind various forms of dummy deck loads, e.g., bales or packing cases of merchandise, trusses of hay: in a few boats it was located within a collapsible pantechicon furniture van, or under a dummy boat built in folding sections. The 12 pdr. were behind lidded ports to port and starboard of chart house. It was expected that, on account of shallow draught, torpedoes fired by U-boats would under-run P.C.-boats. *Dart* so named on selection for Fishery Protection Duty, 1925.



SPEY.

1929 Photo, Cozens & Co., Portsmouth.

10 C. M. B. (Coastal Motor Boats).

Note.—Four of these (Nos. 81, 83, 84, 115) have been lent to the Air Ministry, and one (No. 4) to the Imperial War Museum. Boats are distinguished by numbers (see particulars below), except the Senior Officer's vessel at Haslar Base, which is named *Hornet* (ex C.M.B. 102). Others in commission are Nos. 2, 12, 85, 119.



C. M. B. 55-FT. TYPE.

1919 Photo, Cribb, Southsea.

55-ft. type. 10 tons. Dimensions: 60 (over trough) \times 11 \times 3 ft. 3 in. (over propeller tips). Armament: 4 Lewis guns in pairs, with 2—18 inch torpedoes in troughs at stern. Some modified to take only 1—18 inch torpedo and 2 or 4 D.C. Other boats, when used for low speed work, could carry 4 torpedoes in dropping gears over beams. Have done 41 kts. and over in service. W/T. fitted in these. Complement, 5. B.H.P. 900=41 kts. Petrol, 500 gallons. Designed by Messrs. Thornycrofts Ltd. Full descriptions have appeared in technical press. It need only be remarked that they discharge their torpedoes tail first from troughs over stern, then swerve on their course and allow torpedoes to run past to target. All stepped hydroplane type hulls with chine to damp down bow wave. Considering their small size, they have excellent nautical qualities. It is little use stating letters and numbers of boats retained in service, as these craft can be laid up and placed out of commission at very short notice. Other details as Table. For full description see "Engineer," April 18th, 1919, and Messrs. Thornycroft's own descriptive brochure.

51 (+ 10 Building) = 61 Submarines.

No.	Type	First begun.	Last completed.	Displacement tons	H.P.	Max. speed kts	Fuel tons	Complement	T. Tubes	Mines.
4	<i>Rainbow.</i>	1929	<i>Bldg.</i>	...	...	...	...	...	...	...
6	<i>Parthian.</i>	1928	<i>Bldg.</i>	1570 2040	4400 1350	17.5 9	...	...	8	...
6	<i>Odin.</i>	1927	1929	1540 2030	2700 1350	15 9	200	...	8	...
1	<i>Oberon.</i>	1924	1927	1345 1805	2700 1350	15 9	200	...	8	...
1	<i>X I.</i>	1921	1924	2525 3600	6000 2800	19.5 9	...	110	6	...
2	<i>M 2—M 3.</i>	1917	1920	1600 1950	2100 1600	15.5 9.5	76	60	4	...
6	<i>L 52—71.</i>	1917	1924	960 1150	2400 1600	17.3 10.5	78	40	6	0
16	<i>L 11—33.</i>	1916	1926	890 1080	2400 1800	17.5 10.5	76	36	4-6	16*
4	<i>L 3—8.</i>	1916	1918	890 1070	...	...	...	...	...	...
1	<i>K 26.</i>	1918	1923	2140 2770	10000 1400	23.5 9	300	65	10	0
14	<i>H 23—50.</i>	1917	1919	440 500	480 320	13 10.5	16	22	4	0

*Mines carried in 3 boats of L type, and in M 3.

Notes to above Table.

Excepting *H 23-50* of "Holland" type, all above types are to Admiralty design. Above Table and description by classes on later pages, arranged alphabetically by Class Letters. Rough division by types and building dates is thus:—

- 1 Fleet type: *X I.*
- 32 Ocean-going boats: 6 *Odin* class, *Oberon*, *L 1—71*, *K 26*, *M 2*.
- 14 Sea-going boats: *H 23—50*.
- 4 Minelayers: *L 14*, *17*, *25*, *M 3*.

4 "R" Type (Rainbow class).

- 1 Chatham Dockyard: *RAINBOW*.
 - 3 Vickers-Armstrongs: *REGENT*, *REGULUS*, *ROVER*.
- No official information available, but are likely to follow "P" type in main features. All laid down 1929 under 1928-29 Estimates. Two more of this class were to have been built—*Royalist* by Beardmore and *Rupert* by Cammell Laird—but orders were cancelled in July, 1929.

6 "P" Type (Parthian class).

- 1 Chatham: *Parthian* (June 22nd, 1929).
 - 1 Cammell Laird: *Phoenix* (Oct 3rd, 1929).
 - 4 Vicker, Armstrongs: *Pandora* (ex *Python*) (Aug. 22nd, 1929), *Perseus* (May 22nd, 1929), *Poseidon* (June 21st, 1929), *Proteus* (July 23rd, 1929).
- Displacement: 1570 tons standard. Dimensions: $\times \times \times$. Armament: 1—4 inch gun, 8—21 inch tubes (6 bow, 2 stern). Designed H.P. 4400 = 17.5 kts.
- General Notes.—All laid down 1928 under 1927-28 Estimates. Generally resemble "O" type, with higher surface speed and other improvements. To be completed in March, 1930.

BRITISH—Submarines.

BRITISH NAVY—SUBMARINES

1 X Class.

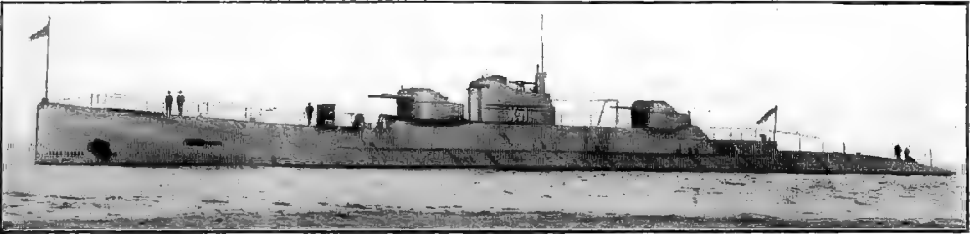
X 1 (June 16th, 1923) by Chatham Dockyard, provided under 1921-22 Navy Estimates. Understood that her design embodies various novel features derived from war experience, post war experiments, and trials run with sundry types of surrendered German Submarines. Displacement: standard 2525, *normal surface* 2780 tons; *submerged*, 3600 tons. Dimensions: 350 × 29½ × 17 feet. Armament: 4—5.2 inch, 2 M.G., and 6—21 inch torpedo tubes. Diesel engines of 6000 H.P. = 19.5 kts. Submerged, B.H.P. 2600 = 9 kts. Complement 110. Total cost, £941,794, or with alterations, £1,044,158.

Notes.—It is reported that X 1 is capable of remaining submerged for 2½ days, and that she has an exceptionally small turning circle. Designed for deep diving, and construction is therefore of exceptional strength. Gun positions appear to be armoured. Laid down 1/11/21; first trials run in Jan., 1924. Official commissioning date, 25 Sept., 1925.



X 1.

1925 Photo, Cribb, Southsea.



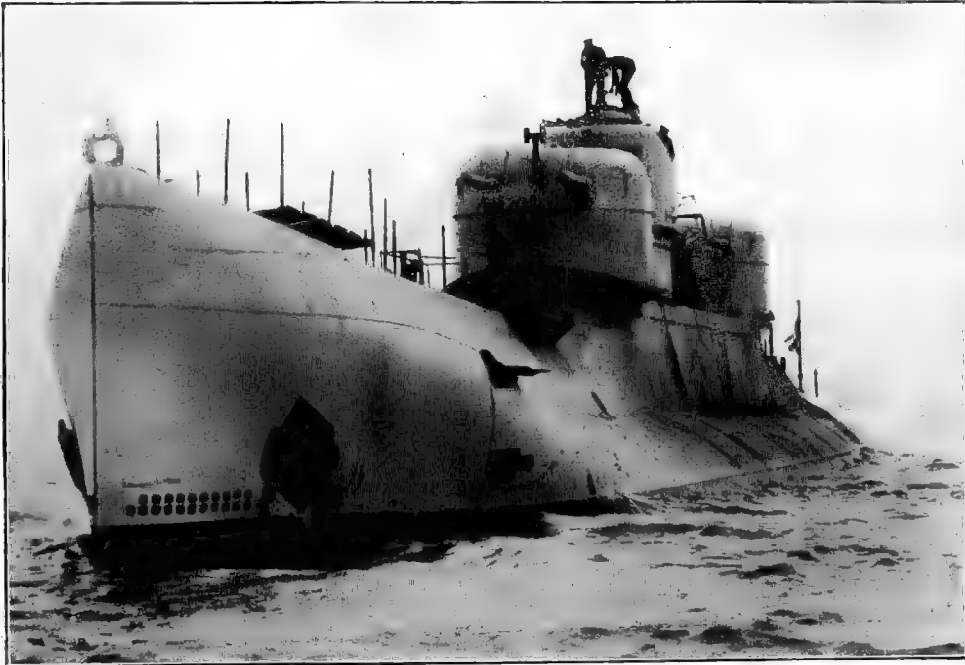
X 1.

1925 Photo, Cribb, Southsea.



X 1.

1925 Photo, Cribb, Southsea.

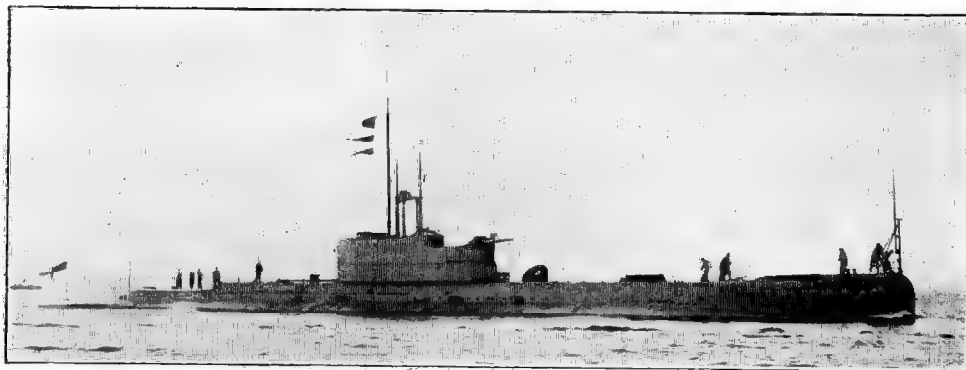


X 1.

1926 Photo, Cribb, Southsea.

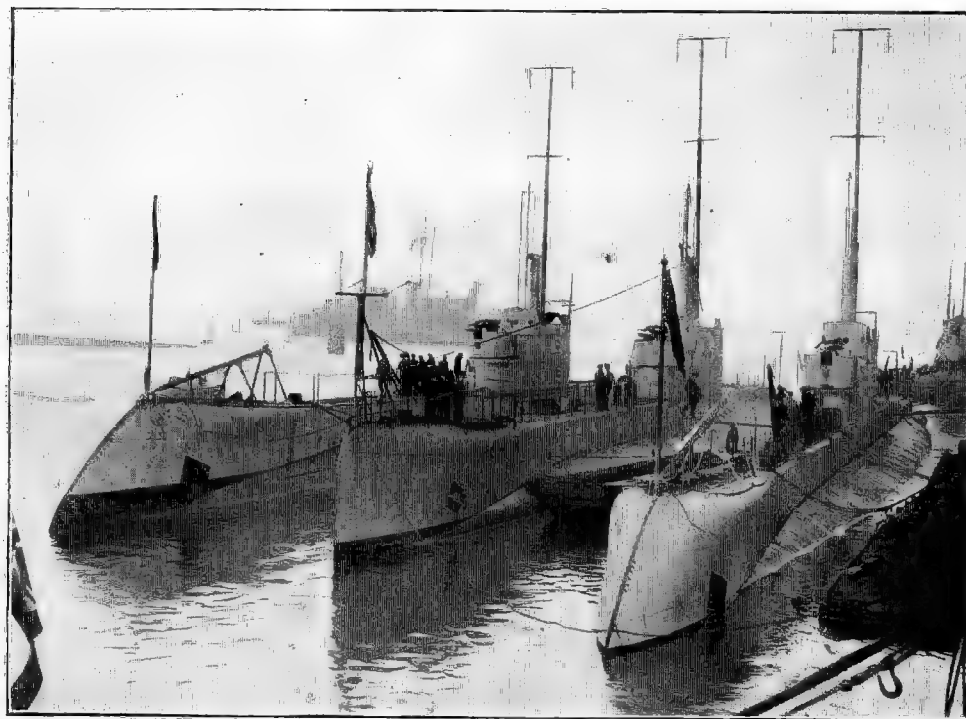
7 "O" Type (Oberon + 6 Odin class.)

(For 2 more of this type, vide R. Australian Navy.)



OBERON. (Signal mast now removed.)

1927 Photo, Cozens, Portsmouth.



OTWAY.

OBERON.

OXLEY.

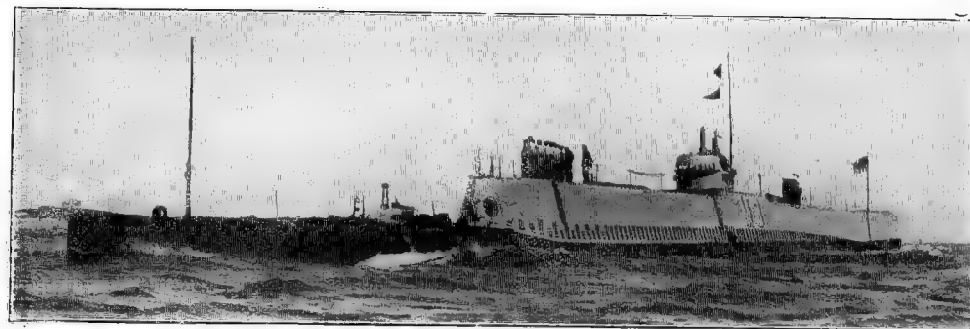
1928 Photo, Cribb.

2 Chatham Dockyard: **Oberon** (ex O 1, Sept. 24th, 1926), **Odin** (May 5th, 1928).2 Beardmore: **Olympus** (Dec. 11th, 1928), **Orpheus** (Feb. 26th, 1929).3 Vickers-Armstrongs: **Osiris** (May 19th, 1928), **Oswald** (June 19th, 1928), **Otus** (Aug. 31st, 1928).

Displacement: **Oberon** 1315 tons standard, 1480 tons normal, on surface; 1805 tons submerged. Others all $\frac{1540}{1630}$ tons standard. Dimensions: $260 \times 23 \times 13\frac{1}{2}$ feet draught. Armament: 1—4 inch gun (in armoured position), 8—21 inch tubes (6 bow, 2 stern). Designed H.P. $\frac{2700}{3350} = 1\frac{1}{2}$ kts. Oil fuel: 200 tons.

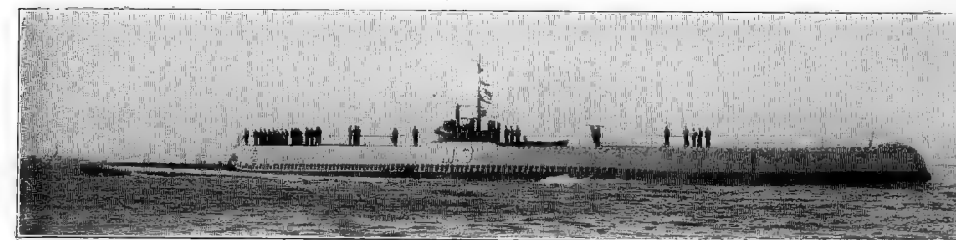
General Notes.—**Oberon**, 1923-24 Estimates; others all 1926-27. Officially described as "Overseas Patrolling Submarines."

2 M Class.



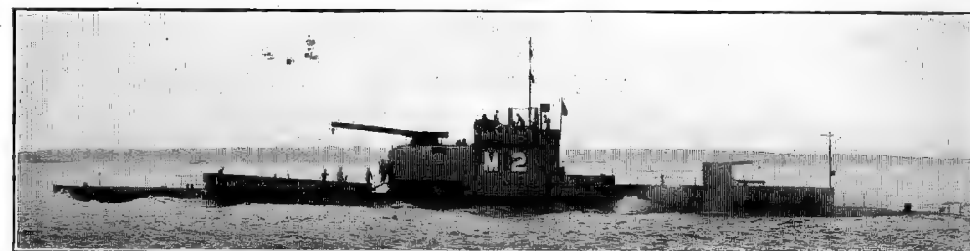
M 3.

1929 Photo, Cribb, Southsea.



M 3.

1929 Photo, Cozens & Co., Portsmouth.



M 2. With hangar and crane fitted.

1928 Photo, Cribb.

M 2 ex **K 19** (Oct., 1918), by Vickers. **M 3** ex **K 29** (Oct., 1920), by Armstrong Whitworth.

Admiralty double-hulled type. Displacement: $\frac{1600}{1950}$ tons. Dimensions: 303 (o.a.) in **M 3** and 296 (o.a.) in **M 2** $\times 24\frac{1}{2} \times 15\frac{1}{2}$ feet. Guns: 1—3 inch disappearing, 1 Lewis 2 in **M 2**. Tubes: 4—18 inch bow. Machinery: 2 sets of 12-cyl. 4-cycle, solid injection, 1200 B.H.P. Vickers type. Oil fuel: 76 tons. Other details as Table.

Gunnery Notes.—Both ships formerly carried one 12 inch Mk. XI, but these have been removed. **M 2** employed experimentally to carry a seaplane. **M 3** is at present fitted for minelaying.

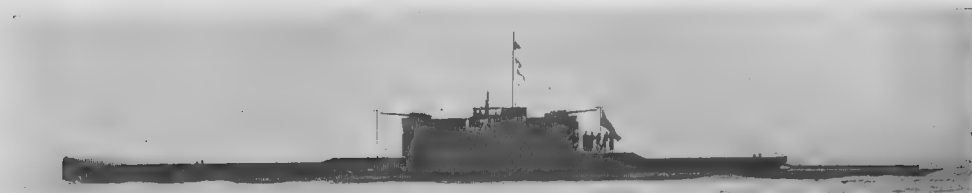
General Notes.—Begun under War Emergency Programme, 1916, and completed 1920. Are said to be very handy boats, both in dive and general control. Originally armed with a 12 inch gun. Under Washington Treaty no more 12-in. gunned boats may be built.

Cancelled.—**M 4** (ex **K 21**) by Armstrongs.

Lost.—**M 1** (ex **K 18**), by collision, 12/11/25.

L Classes.

(Shape of C.T. varies in these boats.)



L 52, L 53 as above photo of L 71, which no longer carries an after gun.

1920 Photo, Gieves, Ltd.



L 56. Deck before C.T. not raised.

1927 Photo, Abrahams, Devonport.

6 L Class. (Third "L" series: "L 50 Class").

(All delivered by November, 1924.)

2 Armstrong Whitworth: L 52 (1918), L 53* (1919).

1 Denny: L 54† (1919).

1 Fairfield: L 56 (1919).

1 Beardmore: L 69§ (1918).

1 Scotts: L 71 (1919).

* Completed by Chatham D.Y., 1924.

† Completed by Devonport D.Y., 1924.

§ Completed by Rosyth D.Y., 1923.

Admiralty saddle-tank type. Displacement: $\frac{960}{1150}$ tons. Dimensions: $230\frac{1}{2}$ (p.p.), 235 (o.a.) \times $23\frac{1}{2}$ \times $13\frac{1}{2}$ feet. Guns: 1—4 inch, 1 M.G. (L 52, L 53 have 2—4 inch). Tubes: 6—21 inch, all in bows. Machinery: 2 sets 12-cylinder solid-injection, Vickers type Diesel engines by Ruston & Hornsby, Willans & Robinson, Bellis & Morcom, Armstrong, Thornycroft. Oil: 78 tons. Other details as Table.

Notes.—All begun under Emergency War Programme, 1917. Equipment as Notes to L 9—33 on next page. Can be distinguished by the long C.T. (and two guns in L 52, 53). L 55 lost in the Baltic.

L Classes—continued.



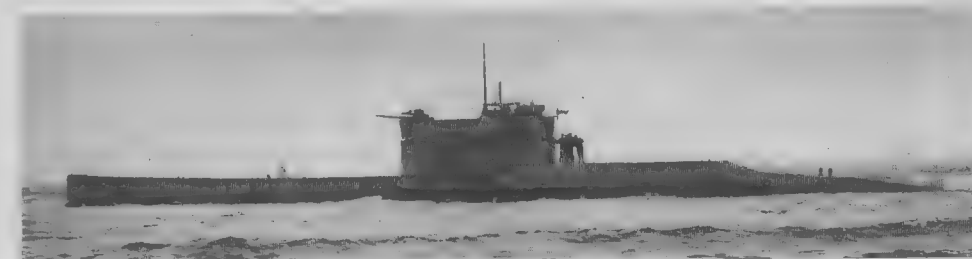
L 33. Hull has straight slope down to stern.

1920 Photo, by courtesy of Messrs. Swan-Hunter (Builders).



L 25 Mine-laying Boat.

1921 Photo, Abrahams, Devonport.



L 20 (L 18, 21, 22, same, but high signalling mast.)

1919 Photo, Cribb, Southsea.

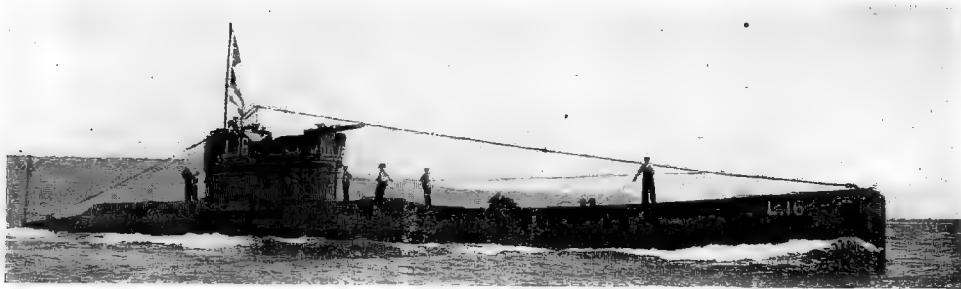


L 12 with w/t balloon. (L 11, same.)

1922 Photo, Gieves, Ltd.

(L 14, L 17, very similar, but flat top to C.T. informer, and no gun in latter).

L Classes—*continued.*



L 16 (and L 15) with deck before C.T. raised.

1921 Photo, Abrahams, Devonport.

L Classes—*continued.*



L 2. (L 5 same in appearance.)

1920 Photo, Cribb, Southsea.

4 "L Class" (First "L" series: L 1—8).

2 *Vickers*: **L 3, L 4** (both 1917). 1 *Swan Hunter*: **L 5** (1918).

1 *Cammell Laird*: **L 8** (1917).

Admiralty saddle-tank type. Displacement, $\frac{890}{1070}$ tons. Dimensions: 222 (p.p.), 231 (o.a.) \times 23½ \times 13½ feet. Guns: 1—4 inch. Torpedo tubes: 4, viz., four bow, all 21 inch. Machinery: 2 sets 12 cylinder solid injection Vickers type. Oil: 76 tons. Other details as table.

Note.—L 6 assigned for special duty as target vessel at Portsmouth, 1927, and no longer counts as an effective unit. L 1, L 2, L 7 all on disposal list, 1929. Remaining boats of this group likely to be disposed of in near future.



L 8. (Deck before C.T. raised.)

1920 Photo, Cribb, Southsea.

L 4, practically same in appearance.

16 L Class (Second "L" Series, L 11—33).

13 *Vickers** **L 11, L 12, L 14, L 17, L 18** (all 1918), **L 19** (1919), **L 20** (1918), **L 21—23** (1919), **L 26—27** (all 1919).

2 *Fairfield*: **L 15** (1917), **L 16** (1918).

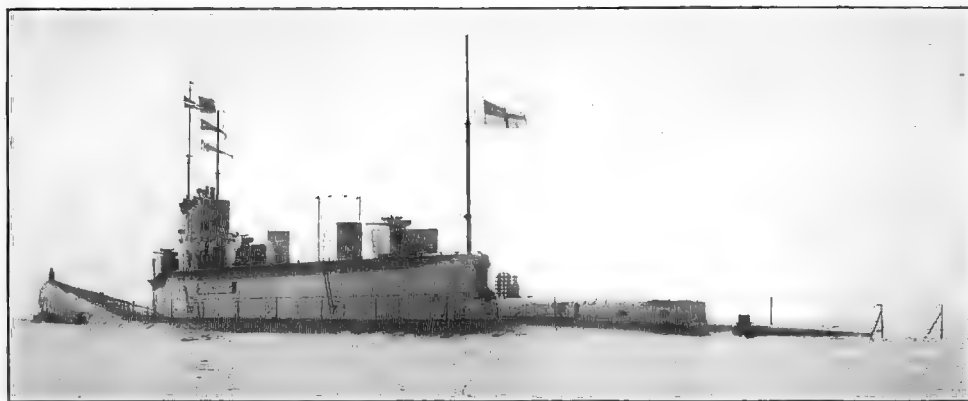
1 *Swan Hunter*: **L 33** (1919).

*L 23 completed by Chatham D.Y., 1924; L 26, completed by Portsmouth & Devonport D.Y., 1926 and L 27 by Sheerness D.Y., 30 Nov., 1925.

Admiralty saddle-tank type. All details as L 1—8 in next column, with these variations:—Displacement, $\frac{890}{1050}$ tons. Length (p.p.), 229 feet and 238½ feet (o.a.). Armaments: L 11, 12, 16, 18, 21, 22, 1—4 inch, 6 tubes; L 15, 19, 20, 26, 27, 33, 1—4 inch, 4 tubes; L 14, 17, 25, 16 mines in addition. (L 12, L 17, L 25, no gun, or only 1 M.G. at present.) All 4 or 6—21 inch tubes in bows; there are no beam tubes in these boats.

Notes.—All begun under Emergency War Programme, 1916. Equipment of these boats is extensive, e.g., refrigerating machinery for storage batteries, gyro compass with repeaters, 3 periscopes (one for night work), directional hydrophones, &c. Breastwork revolves with gun. L 10 War loss. L 24 rammed off Portland, January, 1924. L 9 foundered in a typhoon at Hong Kong, August, 1923, but was salvaged the following month; since placed on Disposal List.

1 Improved K Class.



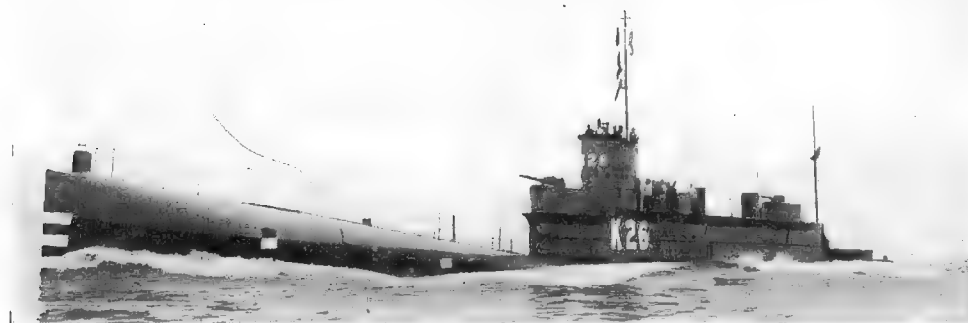
K 26.

1926 Photo, Cribb, Southsea.



K 26.

1926 Photo, R. Perkins, Esq.

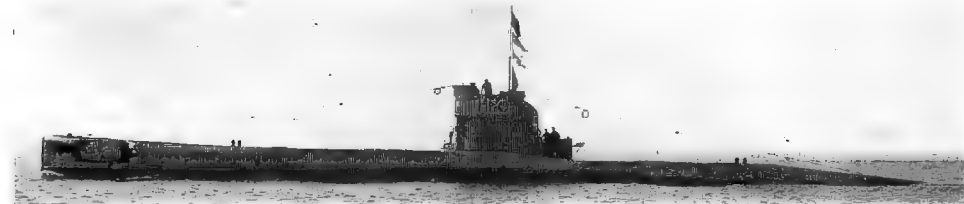


1923 Photo.

K 26. Ordered April, 1918. Begun July, 1918, by Messrs. Vickers, Ltd.; launched August 28th, 1919, and completed at Chatham D.Y., May, 1923. Displacement, $344\frac{1}{2}$ tons. Dimensions: $351\frac{1}{2} \times 28 \times 16$ feet 10 inches (mean). Guns: 3—4 inch, 2 M.G. Torpedo tubes: 10. Machinery: Parsons turbines. Oil fuel: 300 tons *max.* Other details as table.

Note.—This vessel made an experimental cruise to Colombo and back, January—August, 1924. Armour facing to gun screens. Standard displacement: 1786 tons, surface.

14 H Class.



1920 Photo, Gieves, Ltd.

H 23. (H 24—32, H 48—50 same; H 33, 34, have flat-topped C.T.; and H 43, 44 have right angled instead of curved after screen to C.T.)

7 Vickers: H 23 (1918) H 24 (1918), H 27, H 28, H 30—32 (all 1918).

2 Cammell Laird: H 33, H 34 (both 1918).

2 Armstrong Whitworth: H 43, H 44 (both 1919).

3 Beardmore: H 48, H 49, H 50 (all 1919).

Single-hull "Holland" (Electric Boat Co.) type modified by Admiralty. Displacement, $144\frac{1}{2}$ tons. Dimensions: $164\frac{1}{2}$ (p.p.), 170 (o.a.) $\times 15\frac{1}{2} \times 11\frac{1}{2}$ feet. Tubes: 4—21 inch bow. Machinery: 2 sets of Diesel engines, 8 cylinder, 4-cycle, air injection "H" type, developing 240 B.H.P. at 375 r.p.m., and built by Vickers, North British Diesel Co., Ruston & Hornsby, &c. Oil: 16 tons. Other details as Table.

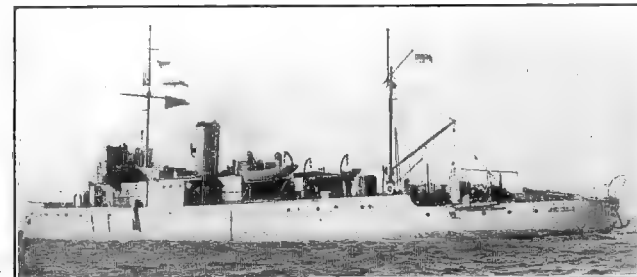
Notes.—All built under War Emergency Programme. Launching dates as above. First boat delivered January, 1918, and H 44 last, in March, 1920. H 29 sank in dock at Devonport, August, 1926, and placed on disposal list in consequence. H 26, H 52 on disposal list, 1927; H 22, H 25, 1928. H 47 sunk by collision with L 12, July, 1929.

Minesweepers. (Details opposite.)



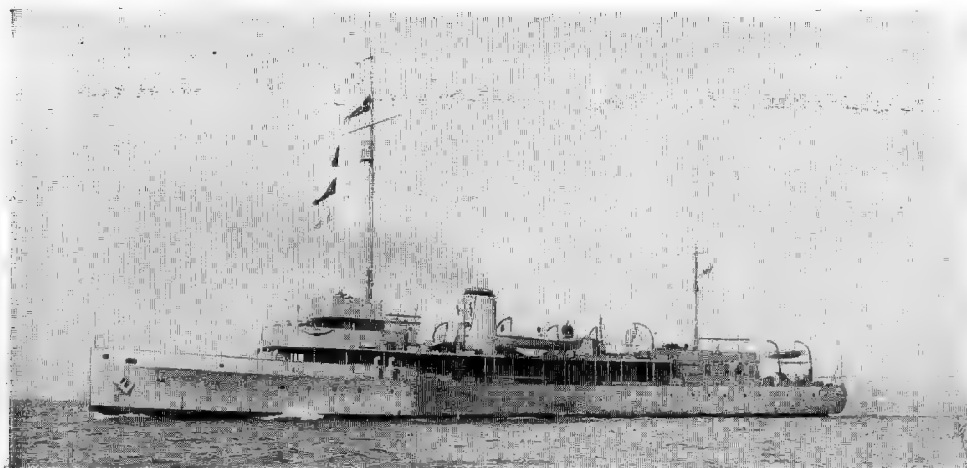
TIVERTON.

1929 Photo, Abrahams, Devonport.



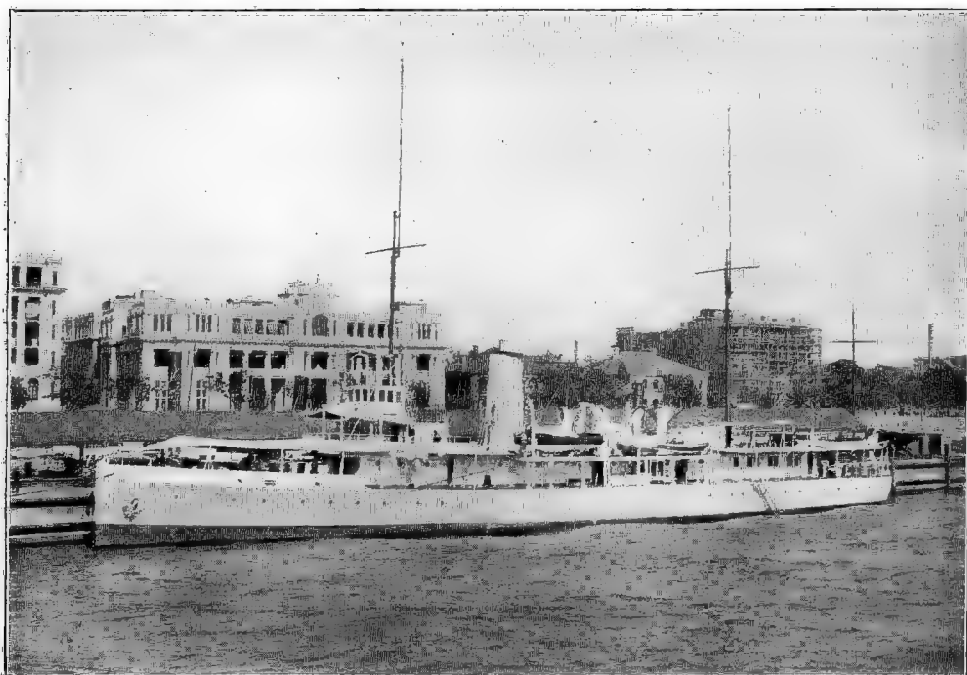
TEDWORTH.

1924 Photo, Abrahams, Devonport.



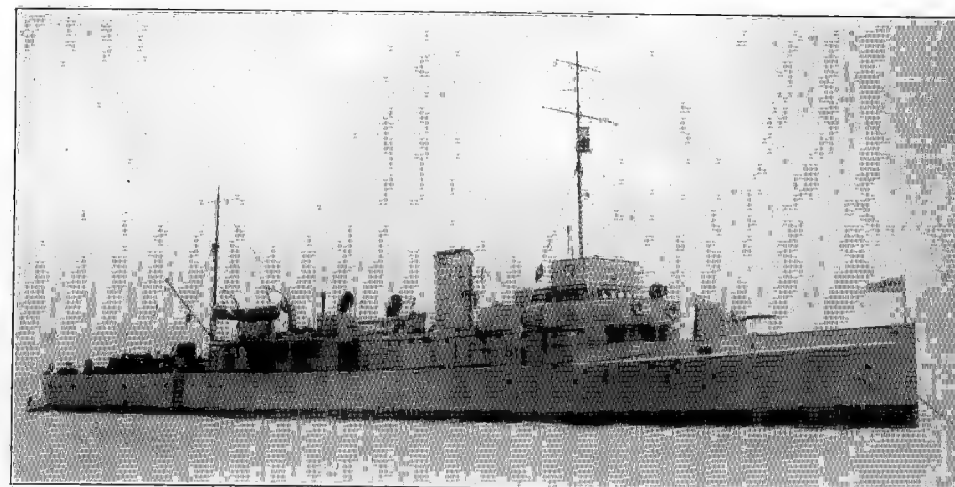
ALRESFORD.

1921 Photo, Gieves, Ltd.



PETERSFIELD. (Very high topmasts.)

1924 Photo, R. G. Strugnell, Esq.



FERMOY.

1929 Photo.

(TWIN SCREW CLASS—29 SHIPS.)

- 4 Ailsa S.B. Co : **ABERDARE**, **ABINGDON** (a), **ALBURY** (b), **ALRESFORD**,
 1 Ardrossan Co. : **BAGSHOT**.
 2 Bow, McLachlan : **CARSTAIRS**, **CATERHAM**.
 4 Clyde S.B. Co. : **DERBY** (a), **DUNDALK** (b), **DUNOON** (b), **FORRES** (b).
 1 Dundee S.B. Co. : **FERMOY** (a).
 1 Dunlop Bremner : **FAREHAM** (a).
 2 Eltringhams : **HARROW** (a), **HUNTLY** (b).
 1 Fairfield : **LYDD** (a).
 1 Fleming & Ferguson : **MARAZION** (b).
 3 Lobnitz : **PANGBOURNE**, **PETERSFIELD**, **ROSS** (b).
 1 McMillan : **SUTTON** (a).
 3 Murdoch & Murray : **SALTASH** (a), **SALTBURN** (a), **SELKIRK** (b).
 1 Napier & Miller : **WIDNES**.
 1 Chas. Rennoldson : **STOKE** (a).
 3 Simons : **ELGIN** (b), **TEDWORTH**, **TIVERTON** (a).

All built under Emergency War Programme and launched between June, 1917 and Aug., 1919. Displacement, 800 tons; *except Tedworth*, 750 tons. Dimensions : 220 (p.p.), 231 (o.a.) × 28 ft. 7½ in. × 7½ ft. (mean draught). Machinery : Vertical triple expansion. 2 screws. Yarrow boilers. Designed I.H.P. 2200 = 16 kts.; *except Tedworth*, 1800 = 14 kts. Coal : 185 tons = *about* 1500 miles at full speed (*Tedworth*, only 140 tons). Complement of all, 73. Guns : in Ships marked (a), 1—4 inch, 1—12 pdr.; marked (b), 1—6 pdr. *Petersfield* has 1—4 inch, 4—3 pdr.; *Tedworth*, 1—3 inch AA.; and remainder carry no guns at present.

The majority of these ships are paid off and comprise the Reserve of mine-sweepers. *Tedworth* is tender to Gunnery and Diving Schools, Devonport. There are various minor variations in these ships, besides those illustrated above, e.g., many have had gallows and sweeping gear removed, deck houses built aft, &c.

The following vessels, comprising 1st Minesweeping Flotilla, are distinguished by numerals on bridges, viz., *Tiverton*, 1; *Albury*, 2; *Dundalk*, 3; *Dunoon*, 4; *Sutton*, 5; *Selkirk*, 6. *Pangbourne* has no number at present.

Sloops.

(SANDWICH CLASS—2 SHIPS.)



BRIDGEWATER.

1929 Photo, Abrahams, Devonport.

2 *Hawthorn Leslie*: **BRIDGEWATER** (Sept. 14th, 1928:), **SANDWICH** (Sept. 28th, 1928). Displacement: Standard 945 tons (about 1250 tons deep load). Dimensions: 250 (*p.p.*), (266 *o.a.*), \times 34 \times 8½ feet. (*mean*). Guns: 2—4 inch AA, 2 M.G. Machinery: Parsons' impulse reaction turbines with single reduction gearing. 2 screws. 2 3-drum watertube boilers, pressure 250 lbs. Designed S.H.P. 2000=17 kts. Oil: 275 tons. Designed for service in Far East and fitted for minesweeping. Built under 1927-28 Estimates and both completed March, 1929.

(FOLKESTONE CLASS—6 SHIPS.)

3 *Devonport Dockyard*: **HASTINGS**, **PENZANCE**. Laid down July, 1929. **FOWEY**. Laid down December, 1929.

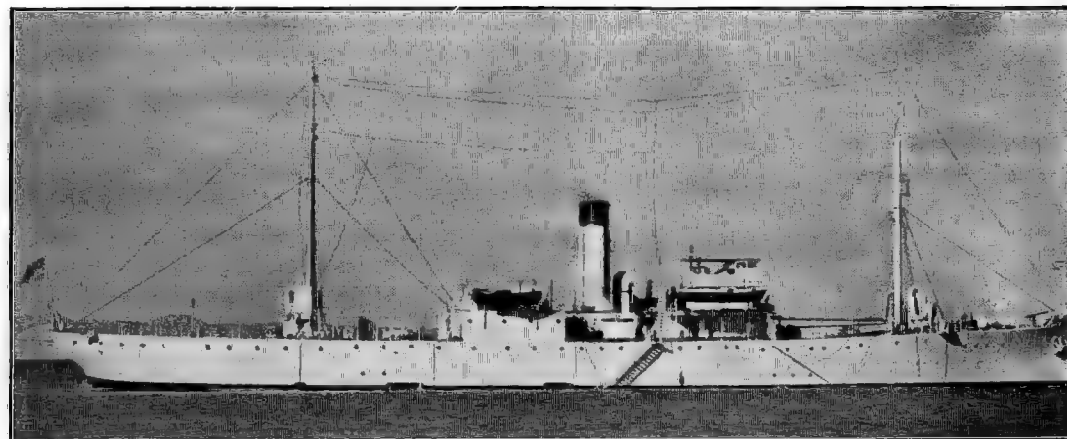
2 *Swan, Hunter*: **FOLKESTONE**, **SCARBOROUGH**. Laid down 1929.

1 *Chatham Dockyard*: **SHOREHAM**. Laid down 1929.

Displacement about 1200 tons. Guns: 2—4 inch, 4—3 pdr. No other details published, but will probably be similar to *Sandwich* type in main features.

General Notes.—Designed for service in Tropics and Far East, and laid down under 1928-29 and 1929-1930 Estimates. The Royal Indian Marine Sloop *Hindustan* is of the same design. 4 more vessels of this type are projected under 1929-30 Estimates.

Sloops (Flower Type.) (For Fleet Target Service.)



1924 Photo, Corpl. E. Arnold, R.M.

CHRYSANTHEMUM (Armstrong, Nov., 1917). Ex-Convoy Sloop of *Anchusa* type (*Flower* classes). 1290 tons. Dimensions: 262½ (*w.l.*) \times 35 \times 11 feet. Guns: 2—3 pdr., 1 M.G. Machinery: 4-cylinder triple expansion. 1 screw. 2 cylindrical boilers. Designed I.H.P. 2500 = 16.5 kts. Coal: 260 tons *max*. Complement, 95.



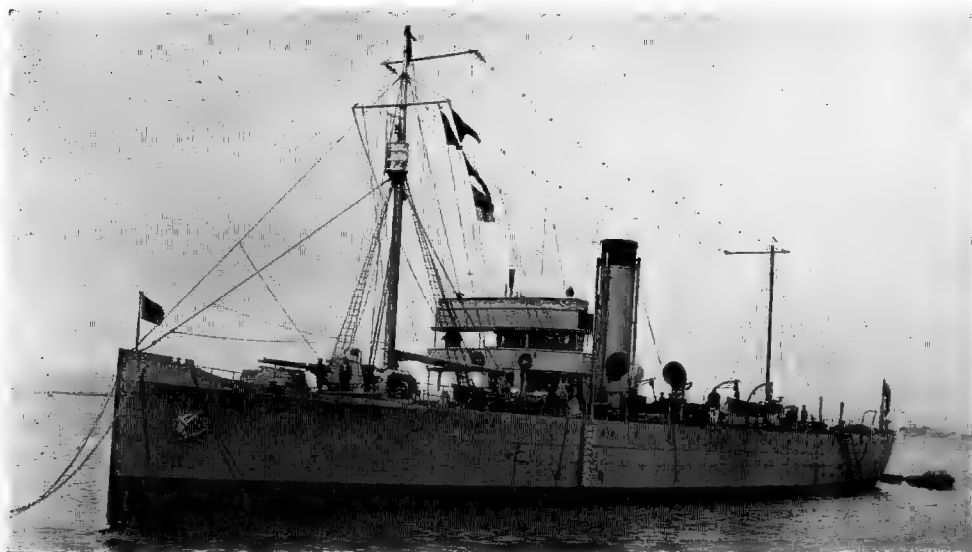
(2 poles abaft second funnel for spreading W/T. aerials now removed.)

Photo added, 1925.

SNAPDRAGON (Ropner, Dec., 1915). Ex Fleet Sweeping Vessel (Sloop) of *Arabis* type, "Flower" classes. 1250 tons. Dimensions: 267½ (*o.a.*) \times 33½ \times 11 feet. Guns: *Nil*. Machinery and boilers as *Chrysanthemum*. I.H.P. 2000 = 16.5 kts. (as designed). Coal: 255 tons *max*. Complement, 98.

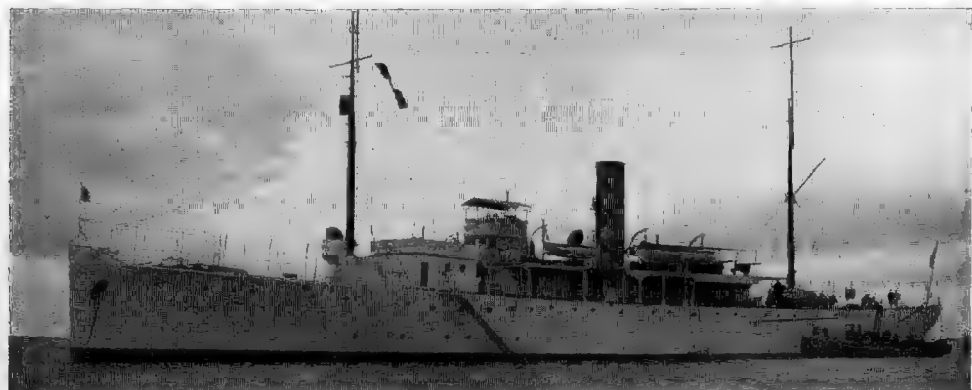
Note.—Is fitted with powerful towing engine and special kinema cabinet at stern for taking motion-pictures of fall of shot on and around target. It is reported that this addition to super-structure causes her to roll and reduces speed.

Sloops.



HEATHER.

1923 Photo, Seward, Weymouth



BRYONY.

1921 Photo, J. Spartali, Smyrna.

ANCHUSA TYPE—(First 2 Ships)—and AUBRIETIA TYPE—(3rd Ship.)

HAREBELL (May, 1918), by Barclay, Curle. **BRYONY** (Oct., 1917), by Armstrong Whitworth. **HEATHER** (June, 1916) by Grangemouth Dockyard Co. "Q" Boat type of Convoy Sloop. *Displacement: 1290 tons. Completed Oct., 1916-June, 1918. *Dimensions: 250 (p.p.), 262½ (w.l.) × 35 × 11½-12 (mean), 12½-13½ (max.) feet draught. Guns: *Harebell*, 2—4 inch, 4—3 pdr.; *Bryony*, 4—3 pdr., 1 M.G.; *Heather*, 1—4 inch, 1—3 pdr. AA. Machinery: 4-cylinder triple expansion. Boilers: 2 cylindrical. 1 screw. Designed H.P. 2500=16.5 kts. Coal: 260 tons (316 tons in *Harebell*). Complement, 98 (118 in *Harebell*).

Note.—*Chrysanthemum* (for Fleet Target Service) transferred to another page. *Lychnis* (now renamed) transferred to Government of India. *Harebell* at present employed on Fishery Protection duties. *Heather* attached Anti-Submarine School. **Heather*: 1250 tons. 277½ × 33½ × 13½ feet.



HAREBELL.

Photo, Abrahams, Devonport, 12th Oct., 1921.



CLEMATIS.

1924 Photo, Lieut. R. Moore, R.N.

(AZALEA TYPE—FIRST 2 SHIPS—AND ACACIA TYPE—OTHER 6)

CLEMATIS (Greenock & Grangemouth Co., July, 1915), **HELIOTROPE** (Lobnitz, Sept., 1915).

DAHLIA (April, 1915), **FOXGLOVE** (Mar., 1915), both by Barclay, Curle. **DAFFODIL** (August, 1915), **MAGNOLIA** (June, 1915), both by Scotts S.B. Co. **LABURNUM** (June, 1915), by Connell & Co. **VERONICA** (Dunlop, Bremner, May, 1915).

All 1200 tons *normal*, 1269-1325 *full load*. Completed, May-Sept., 1915. Dimensions: 250 (p.p.), 262½ (o.a.) × 33 × 11 (mean), 11½-12 feet (max. draught). For present guns, see Table on next page. Designed H.P. 1800 = 16.5 kts., but actually require about 2200 I.H.P. for this speed. Machinery: 1 set 4-cylinder triple expansion. Boilers: 2 cylindrical. 1 screw. Coal: 130 tons *normal*, 250 tons *max.* = about 2000 miles at 15 kts. Complement, 104 (106 in *Clematis*). For *Mallow* of this type, see Royal Australian Navy. Also see *General Notes* on next page.

(Continued on next page.)

BRITISH—Sloops.

BRITISH NAVY: SLOOPS.

Classes—continued "Flower"



CROCUS
1921 Photo, Com. A. R. Watts, R.N.
Above illustration shows appearance after refit for Foreign Service, i.e., with enlarged forebridges, guest cabin aft, &c.



CORNFLOWER.
Photo. Dec., 1920, Com. M.P. Cooper. R.I.M.

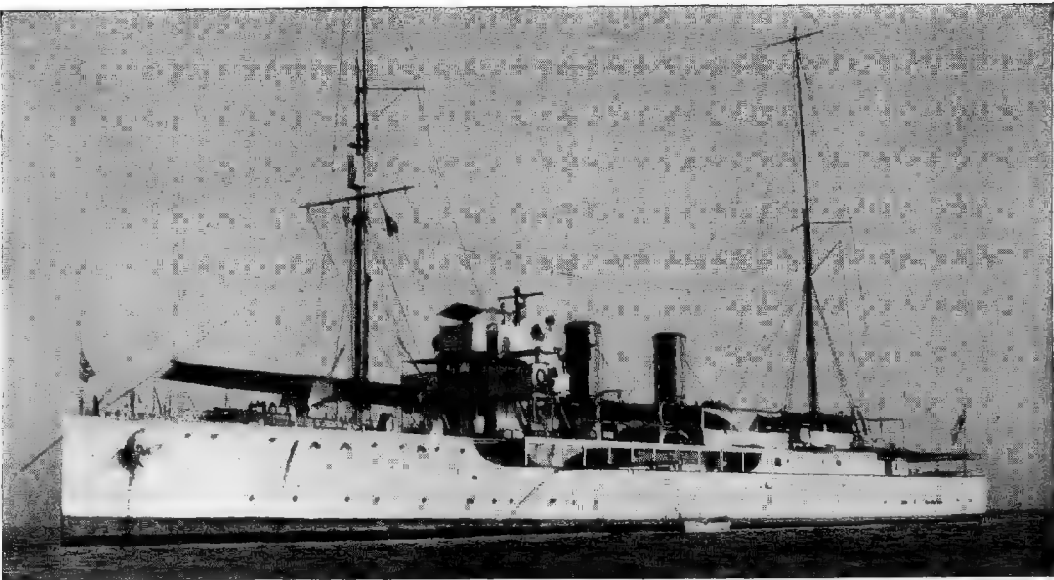
Note.—In *Heliotrope*, *Magnolia*, *Wistaria*, mainmast removed during War, but since replaced.

GUNS CARRIED. (Several carry M.G. in addition.)			
<i>Foxglove</i>	2—4 inch	<i>Heliotrope</i>	1—4 inch
<i>Laburnum</i>	4—3 pdr.		2—2 pdr. pom-pom
<i>Magnolia, Veronica</i>	2—2 pdr. pom-pom	<i>Dahlia</i>	1—4 inch
<i>Clematis, Daffodil</i>	2—4 inch		1—12 pdr.
	4—3 pdr. A.A.		

GENERAL NOTES.

For "Arabis" Type on this page, and for "Azalea" and "Acacia" Types on previous page.

Single-screw Fleet Sweeping Vessels (Sloops), all built under Emergency War Programme. Originally planned that only 12 should be ordered, but the first series ordered December, 1914-January, 1915, comprised 24 ships. A further 48 were ordered between May and September, 1915. In all, 72 of these ships were built. To ensure rapid building, design was made as simple as possible; mercantile practice was resorted to and orders were distributed among firms which did not usually build war vessels up to 1914. Built under Lloyds' survey, in about 25 weeks. Have triple hulls at bows to give extra protection against loss when working up mines. Not handy ships, as single screw gives a wide turning circle. Very lively ships, but can face any weather. Few can do more than 15 knots at sea. Some are being altered to burn oil fuel.



CYCLAMEN (*Godetia* and *Lupin*) with very high masts.

(ARABIS TYPE—9 SHIPS.)

CORNFLOWER (Mar., 1916), by Barclay, Curle. **GODETIA** (Jan., 1916), by Connell. **WALLFLOWER** (Nov., 1915), **WISTARIA** (Dec., 1915), both by Irvine S.B. Co. **CROCUS** (Dec., 1915), **CYCLAMEN** (Feb., 1916), both by Lobnitz. **LUPIN** (May 1916), by Simons. **VERBENA** (Blyth S.B. Co., Nov., 1915), **DELPHINIUM** (Napier & Miller, Dec., 1915), **ROSEMARY** (Richardson, Duck, Nov. 1915).

Normal displacement, 1250 tons (1973 tons deep load), but those refitted for service on Foreign Stations now displace up to 1500 tons normal, with a mean draught of 12-14 feet.

Completed, Dec., 1915—June, 1916. Dimensions: 255½ (p.p.), 267½ (o.a.) × 33½ × 11 (mean), 11½-11¾ feet (max. draught) for 1250 tons displacement. For present guns v. Table below. Designed I.H.P. 2000=16.5 kts. Machinery: 1 set 4-cylinder triple expansion. Boilers: 2 cylindrical. 1 screw. Coal: 130 tons normal, 260 tons max. = about 2000 miles at 15 kts. (*Lupin* is now oil-fired.) Complement, 98/118 for Foreign Service. Also see *General Notes*.

Snapdragon (for Fleet Target Duties) transferred to an earlier page. *Geranium* and *Marquise* now R. Australian Navy. *Godetia* at present employed on Fishery Protection Duties.

GUNS CARRIED.†		GUNS CARRIED.†	
<i>Crocus, Cyclamen,</i>	2—4 inch*	<i>Cornflower</i>	2—4 inch
<i>Delphinium, Verbena,</i>	4—3 pdr. A.A.		4—3 pdr. A.A.
<i>Wallflower, Wistaria,</i>	2—2 pdr. pom-pom	<i>Godetia</i>	1—4 inch
<i>Lupin</i>			1—12 pdr.
		<i>Rosemary</i>	1—4 inch
			2—2 pdr. pom-pom

*In those refitted for Foreign Service, 4 inch are Mk. IV, with 30° elevation, with Light Directors
†Some carry 8 to 10 Lewis guns in addition.

Minelayers.**Notes.**

In addition to Vessels listed below, the following are fitted for mine-laying duties.

Destroyers.—*Vancouver, Velox, Versatile, Vortigern, Walker, Warwick, Watchman, Whirlwind*, and *Vanoc*, retain mine-laying gear.

Flotilla Leader.—*Abdiel* is fitted for mine-laying. Number of mines carried: 20 in *Destroyers*, 60 in *Abdiel*.

Submarines.—*L 25, L 17, L 14* carry 16 mines each. *M 3* has also been equipped for minelaying.

(SPECIAL "CRUISER-MINELAYER" TYPE—1 SHIP.)

ADVENTURE (18th June, 1924).

"Standard" displacement, 6,740 tons; *normal* displacement, 7,260 tons. Complement,

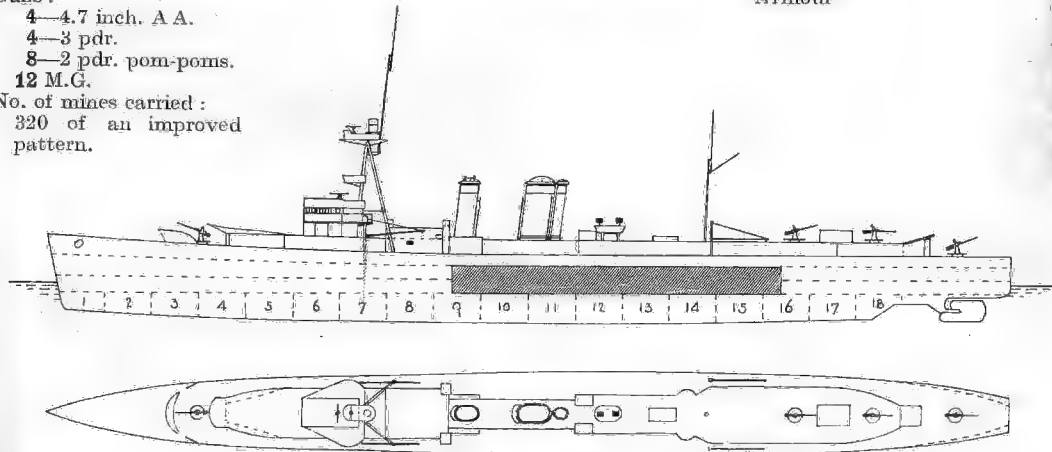
Length {*p.p.*, 500 feet } Beam, 59 feet, Draught {*mean*, 19½ feet.
 {*o.a.*, 520 feet } (over bulges) {*max.*, feet.

Armour

Guns:

4—4.7 inch. A.A.
4—3 pdr.
8—2 pdr. pom-poms.
12 M.G.

No. of mines carried:
320 of an improved
pattern.



Machinery: Parsons turbines, with Diesel engines for cruising purposes. (Electrically controlled). 4 screws. Designed S.H.P. 40,000 = 27.75 kts. **Boilers:** Yarrow. **Fuel** (oil only): 1550 tons.



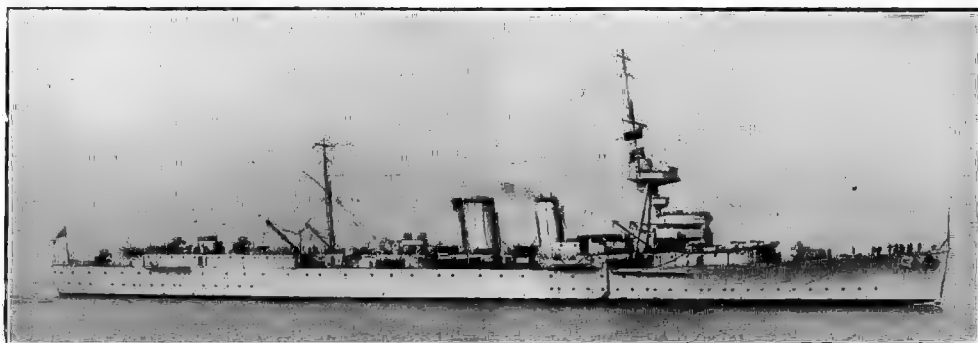
ADVENTURE.

1927 Photo, Gieves, Ltd.

General Notes.—Laid down under 1921-22 Estimates at Devonport Yard, 29th November, 1922; completed 1926, and commissioned May, 1927. Designed by Sir E. H. Tennyson d'Eyncourt as an experimental type, combining the characteristics of a minelayer with those of a light cruiser. The hull is flush-decked, with a marked sheer forward. The curious flat stern, without a counter, is a new departure for a minelayer. There are two large mine-dropping ports in it. Weight has been saved by the sacrifice of armament and ammunition supply, thus giving increased capacity for mines of a new and enlarged pattern. There are 2 pairs of derricks, abreast of bridge and mainmast respectively.

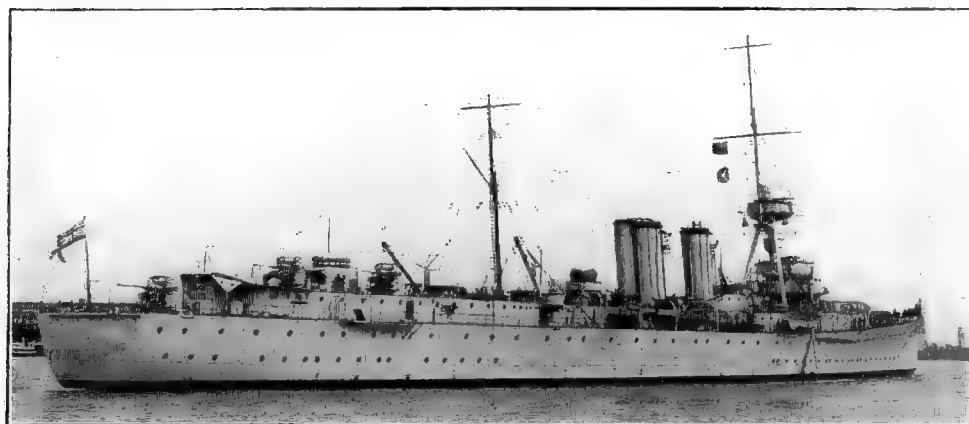
Gunnery Notes.—The 8 pom-poms are on a single mounting, with distant firing position, on forward shelter deck.

Engineering Notes.—The Diesel engines for cruising with electric drive are a novel feature, the results of which are understood to have encouraged the use of Diesel engines for propulsion of depot ship *Medway*. Diesel exhaust shaft is abaft second funnel. The turbine engines were built by Devonport Dockyard; the Diesels by Vickers. Trials: S.H.P. 40,700 = 27.85 kts.



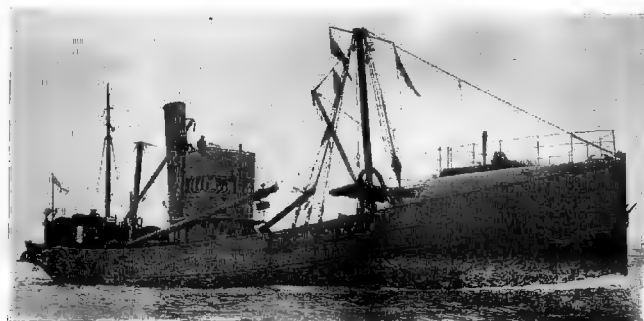
ADVENTURE.

1927 Photo, Cribb.



ADVENTURE.

1927 Photo, Cribb.



VERNON.

1921 Photo, Cribb, Southsea.



MELPOMENE.

1921 Photo, Abrahams, Devonport.

MEDUSA (ex-M 29), **MELPOMENE** (ex-M 31), (Workman Clark), **MINERVA** (ex-M 33), (Harland & Wolff). Launched and completed 1915. 535 tons. Complement, 52. Dimensions: 177 (o.a.) \times 31 \times 6 $\frac{1}{2}$ feet. Guns: None. Carry 52 mines. Designed H.P. 400 = 10 kts. Machinery: Triple expansion. 2 screws. Boilers: Yarrow. Oil fuel: 45 tons.



1921 Photo, Gieves, Ltd.

MEDEA (ex-M 22), (1915). Built by Sir Raylton Dixon & Co. 540 tons. Dimensions: 177 (o.a.) \times 31 \times 6 feet. Guns: None. Carries 44 mines. Machinery: Triple expansion engines and White-Forster boilers. I.H.P. 650 = 12 kts. 2 screws. Oil: 28 tons. Complement, 52.

Note.—Originally Small Monitors built under Emergency War Programme in about six months from laying of keels. Converted by Devonport D.Y. (M 31 and M 22) Pembroke D.Y. (M 29 and M 33) during 1922-25, and used for instructional purposes. Names conferred in place of numbers, 1 Dec., 1925.

VERNON (ex *Strathcoe*.) (Hall, Russell, 1916, purchased). Displacement, 436 tons. Dimensions: 117 $\frac{1}{2}$ (o.a.) \times 22 ft. 1 in. \times 14 ft. 10 in. *max.* draught. No guns. Carries 24 mines. I.H.P. 430 = *about* 10 kts. speed. Coal: 110 tons. Complement, 15.

Kate Lewis (Converted Trawler built by Cochrane, 1916, purchased). *About* 325 tons gross. Dimensions: 117 $\frac{1}{2}$ (o.a.) \times 22 ft. 2 in. \times 12 ft. 4 in. No guns. Carries 24 mines. I.H.P. 475 = 11 kts. Coal: 110 tons. Complement, 15.

Note.—Similar to *Vernon* in appearance, but has taller foremast and no raised forecastle.

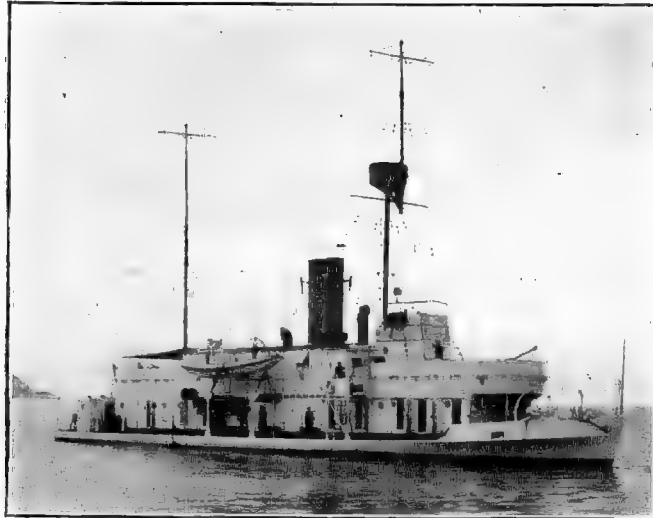
BRITISH NAVY—GUNBOATS.

River Gunboats.

Note.—A new River Gunboat to be named *Falcon*, is to be built under 1928-29 Estimates.

Photo wanted.

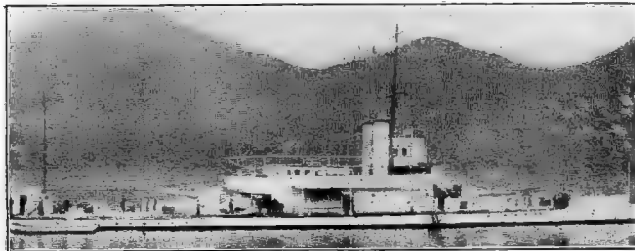
GANNET (1927) & **PETEREL** (1927), both designed and built by Messrs. Yarrow & Co., Ltd. Displacement, 345 tons. Dimensions: 177 (*w.l.*), 184½ (*o.a.*) × 29 × 3 ft. 2½ ins. draught. Guns: 2—3 inch AA., 8 M.G. Machinery: Geared turbines. Boilers: Yarrow. Designed H.P. 2120 = 16 kts. Fuel: 60 tons oil.



TERN.

1928 Photo, Lieut. P.B.A. Curuana, R.N.

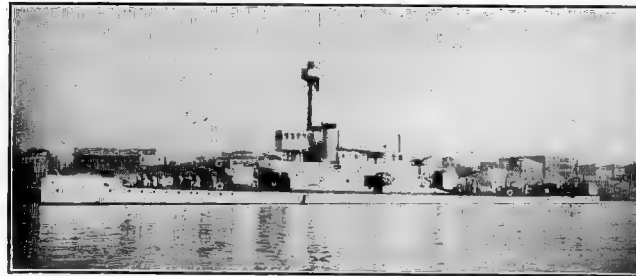
SEAMEW (1927), **TERN** (1927), both designed and built by Messrs. Yarrow & Co., Ltd. Displacement, 287 tons. Dimensions: 160 (*w.l.*), 167½ (*o.a.*) × 27 × 3 ft. 2½ ins. draught. Guns: 2—3 inch AA., 8 M.G. Machinery: Geared turbines. Boilers: Yarrow. Designed H.P. 1200 = 14 kts. Fuel: 50 tons oil.



CRICKET. For description see next column.

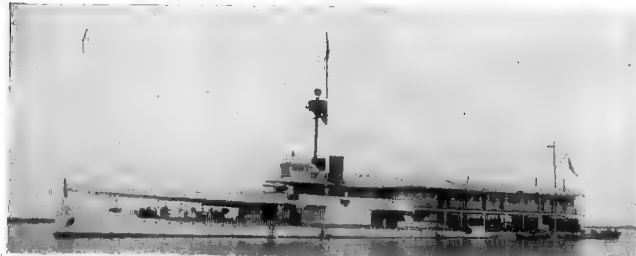
1929 Photo.

River Gunboats—continued.



SCARAB.

Photo added 1925.



BEE (as flagship S.N.O., Yangtse River). Photo by favour of R. G. Strugnell, Esq. (TARANTULA similar, but has large crow's nest.)



APHIS.

1929 Photo.

APHIS (1915), **BEE** (1916), both by Ailsa Co. **CICALA** (1915), **COCKCHAFER** (1915), **CRICKET** (1915) all by Barclay Curle.

GNAT (1915), **LADYBIRD** (1915), both by Lobnitz. **MANTIS** (1915), **MOTH** (1915) both by Sunderland S.B. Co. **SCARAB** (1915), **TARANTULA** (1915), both by Wood, Skinner and Co.

645 tons. Compl. 54—65. Dimensions: 237½ (*o.a.*) × 36 × 4 feet. Guns: 2—6 in. (*Bee* 1 only), 1—3 in. AA., 1—2 pdr. pom-pom (except *Aphis*, *Ladybird* and *Bee* which have 1—12 pdr.). 6 or 8 M.G. Machinery: Triple expansion. Twin screws in tunnels fitted with Messrs. Yarrow's patent balanced flap. Boilers: Yarrow. Designed H.P. 2000 = 14 kts. Fuel: 35 tons coal, 54 tons oil. (*Moth*, 76 tons oil only). On Trials 18 knots was easily obtained.

Note.—Messrs. Yarrow & Co., Ltd., were solely responsible for the design of these vessels, which were built under their supervision during the War.

Gunboats, &c.—BRITISH

River Gunboats—continued.



WIDGEON.

1929 Photo.

WIDGEON (1904), **TEAL** (1901) and **MOORHEN** (1901). 180 tons. Dimensions: 165 × 24½ × 2½ feet. Armament: 2—6 pdr. and 8 M.G. Bullet-proof hull, &c. H.P. 670 = 13 kts. Complement, 35. Coal: 39—36 tons. Built by Yarrow & Co., Ltd., in sections, and re-erected in China. Now nearly worn out.

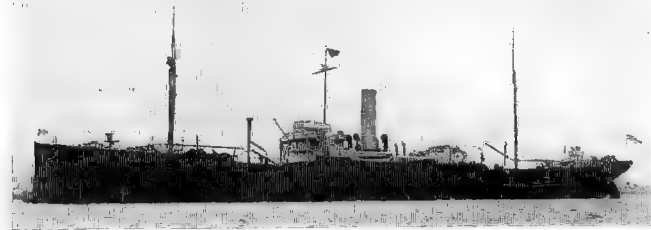
Special Service Vessel.



1924 Photo, Abrahams.

TRIAD. S. N. O's Ship in Persian Gulf. (Caledon S.B. Co., 1909, purchased 1915). 2354 tons. Dimensions: 264 × 35 × 15½ feet. Guns: 4—3 pdr., Hotchkiss. I.H.P. 2235 = 14 kts. Coal: 480 tons.

BRITISH—Depot Ships.

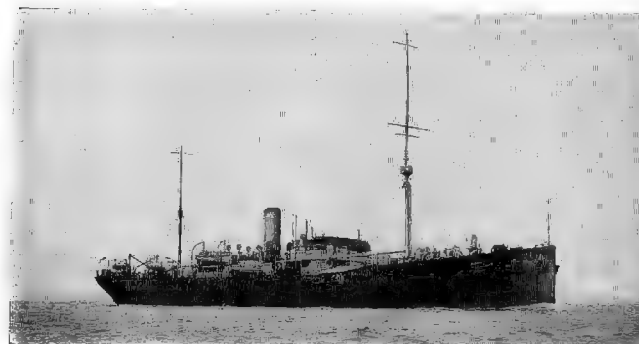


1918 Photo, Abrahams, Devonport.

SANDHURST (ex S.S. *Manipur*, Harland & Wolff, purchased 1915 and converted by Workman, Clark). 11,500 tons. Dimensions: 470 (*p.p.*), 485 (*o.a.*) \times 58 \times 20 feet (*max.* draught). *Guns 4—4 inch, 1—3 inch AA. I.H.P. 3300 = 10.5 kts. Coal: 1475 tons. Complement, 258. Cyl. boilers.

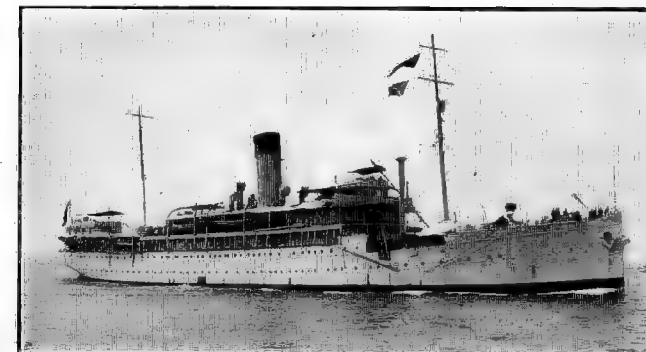
* Also carries several additional 4 inch guns as spares for destroyers.

BRITISH NAVY—DEPOT SHIPS. Destroyer Depot and Repair Ships.



1921 Photo, Hopkins, Southsea.

GREENWICH (Dobson & Co., completed by Swan Hunter. Purchased 1915). 8100 tons. Dimensions: 390 (*p.p.*), 402 (*o.a.*) \times 52 \times 19 $\frac{1}{2}$ feet (*max.* draught). Guns: 4—4 inch, 1—3 inch AA. I.H.P. 2500 = 11 kts. Coal: 960 tons. Complement, 244. Cyl. boilers.

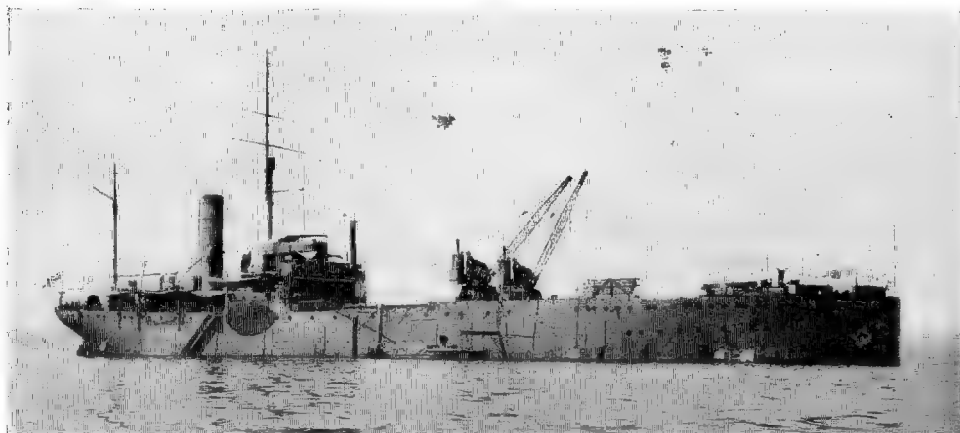


AMBROSE.

1928 Photo, Orribb.

AMBROSE (Sir Raylton Dixon & Co., 1903, converted by Clyde S.B. Co., 1915. Purchased 1915). 6600 tons. Dimensions: 387 $\frac{1}{2}$ (*o.a.*) \times 47 $\frac{1}{2}$ \times 20 $\frac{1}{2}$ feet. I.H.P. 6350 = 14 $\frac{1}{2}$ kts. Coal: 540 tons. Complement, 238. Previously employed as Submarine Depot Ship.

Miscellaneous Depot Ship.



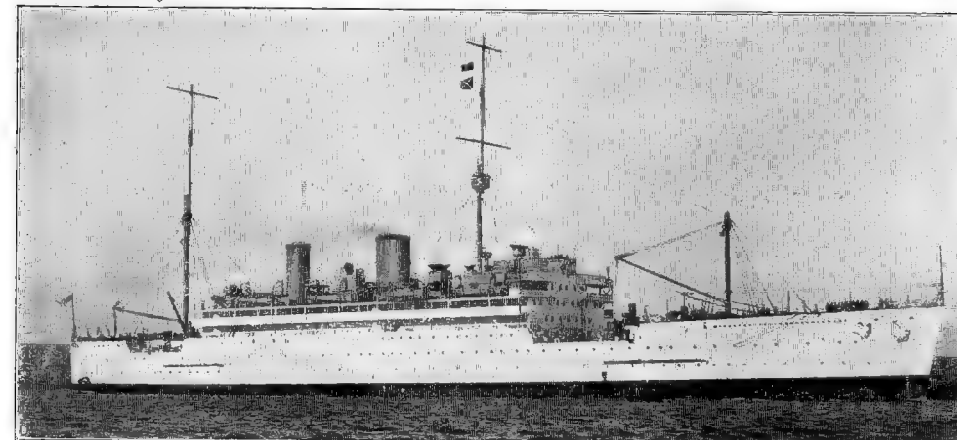
1919 Illustration.

ARK ROYAL (Blyth S.B. Co., 1914, purchased during construction 1914). 7080 tons. Dimensions: 352 $\frac{1}{2}$ (*p.p.*), 366 (*o.a.*) \times 50 $\frac{5}{8}$ \times 17 $\frac{1}{2}$ feet (*mean*). Guns: 4—12 pdr., 4 M.G., 10 Lewis. I.H.P. 3000 = 11 kts. Machinery: Vertical triple expansion. 1 screw. Boilers: Cylindrical. Oil: 500 tons. Complement, 139. Originally employed as an Aircraft Tender. Refitted 1920-21. Until lately, Depot Ship for Central Reserve of Minesweepers, and since used periodically by School of Naval Co-operation. (Likely to be placed on disposal list soon.)

Submarine Depot Ships.

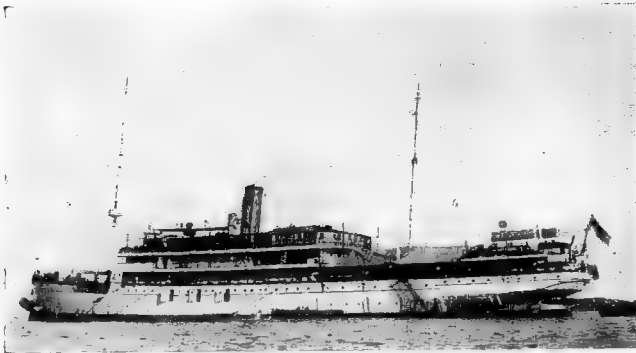
Notes.—Minesweeper **FERMOY** is attached to Portland Submarine Flotilla; Minesweeper **ROSS** to Submarine School, Portsmouth; and Minesweeper **MARAZION** to 4th Submarine Flotilla, China Station.

Under 1928-29 Estimates a Submarine Depot Ship was laid down at Chatham Dockyard, her machinery being ordered from J. Samuel White & Co., Ltd., of Cowes. She was to have been named *Maidstone*, but in July, 1929, the order for her construction was cancelled as a measure of economy.



1929 Photo, Abrahams, Devonport.

MEDWAY. (Vickers, July 19th, 1928). Laid down April, 1927, under 1926-27 Estimates, and completed in Sept., 1929. Displacement, 15,000 tons. Dimensions: 545 (*p.p.*), 580 (*o.a.*) \times 85 \times 23 feet. Guns: 2—4 inch, 4—4 inch AA. Has twin-screw double-acting 2 stroke M.A.N. Diesel engines, total H.P. 8000 = 16 kts. Oil: 530 tons own fuel + 1900 tons for submarines. Equipment includes a Foundry, Machine shop, Plate shop, Smithy, Torpedo shop, Plumber's shop, etc. Designed to mother 18 submarines.

Submarine Depot Ships—*continued.*

1920 Photo, Lieut. P. B. McDonald, R.N.

TITANIA (Clyde S.B. Co., 1915, purchased 1915). 5250 tons. Dimensions: 335 (p.p.) \times 46½ \times 18 feet 5 ins. I.H.P. 3200 = 14.5 kts. Torpedo tubes: 2. Coal: 498 tons. Complement, 249. Cyl. boilers.

Submarine Depot Ships—*continued.*

1920 Photo, Abrahams, Devonport.

LUCIA (Furness Withy & Co., 1907, ex German Prize, *Spreewald*,* converted by Clyde S.B. Co., 1916). 5805 tons. Dimensions: 367½ (o.a.) \times 45 feet 2½ ins. \times 18½ feet. Guns: 2—3 pdr. AA. I.H.P. 2750 = 12.7 kts. Coal: 615 tons. Cyl. boilers. Complement, 262.

*Hamburg-America Liner, captured by H.M.S. *Berwick*, September, 1914.



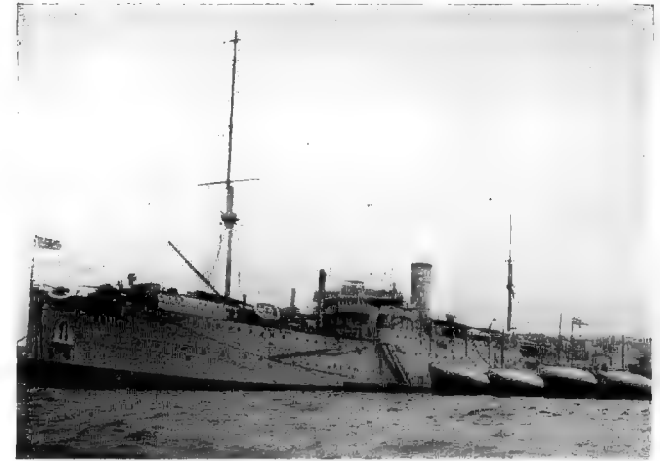
ADAMANT.

1921 Photo, Gieves, Ltd.

(ALECTO has shorter topmasts and smaller bridge.)

ADAMANT and **ALECTO** (both Laird, 1911). 935 tons. Dimensions: 190 (p.p.), 212 (o.a.) \times 32½ \times 11 ft. 1 in. (mean draught). Guns: *Adamant*, 1—4 inch.* Designed H.P. 1400 = 14 kts. Coal: 180 tons. Complement, 76.

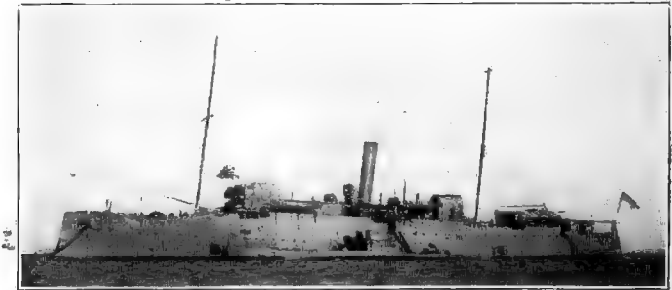
*Officially listed, but not always carried.

Submarine Depot Ships—*continued.*

1923 Photo, R. Perkins, Esq.

CYCLOPS (ex-*Indrabarah*, Sir Jas. Laing & Co, 1905). 11,300 tons. Dimensions: 460 (p.p.), 477 (o.a.) \times 55 \times 21 ft. 2 in. Guns: 2—4 inch (mounted in bows). Machinery: Triple expansion. Designed H.P. 3500 = 13 kts. Coal capacity: 1595 tons. Complement, 266.

Note.—Originally served as Repair Ship. Converted to present use by Chatham D.Y., 1922. Reboilered, 1929.



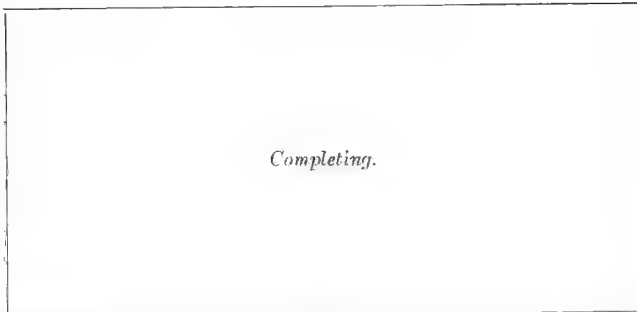
VULCAN.

1927 Photo.

VULCAN (1889). Rebuilt 1908 and 1925. 6620 tons. Dimensions: 350 \times 58 \times 23½ feet (max. draught). Guns: 8—6 pdr. Armour: 5" deck (amidships), 6" conning tower, 5" engine hatches. Designed H.P. 7200 = 17.5 kts. (both figures reduced considerably by removal of forward boiler room and funnel). Coal: *maximum* 1347 tons. Dürr boilers (1909). Complement, 239. (Is to be disposed of shortly.)

BRITISH—Depot Ships, Yachts, R.F.A.

Repair Ships.



Completing.

RESOURCE. (Vickers, Nov. 27th, 1928), laid down, August, 1927, under 1926-27 Estimates. She was completed in Oct., 1929. Displacement, 13,500 tons. Dimensions: 500 (*p.p.*) \times 83 \times 20½ feet. Guns: 4—4 inch AA. 2 sets Parsons single reduction geared turbines. H.P. 7500=15 kts. 4 Yarrow 3 drum boilers, pressure 235 lbs. Auxiliary machinery is Diesel, electrically driven. Oil: 1100 tons + 350 tons for other vessels.



1923 Photo, Seward.

ASSISTANCE (Sir Raylton Dixon & Co., launched and purchased 1900). 9600 tons. Dimensions: 436 (*p.p.*), 445½ (*o.a.*) \times 53 \times 21½ feet. Guns: 2—3 inch AA, 4—3 pdr. Machinery: Triple expansion. Boilers: Cylindrical. Fitted with Howden's forced draught. Designed H.P. (*f.d.*) 4000 = 12 kts. Coal: 2180 tons. Fitted as Floating Workshop and Distilling Ship. Complement, 354. Will be scrapped shortly.

BRITISH NAVY—DEPOT SHIPS, YACHTS, R.F.A.

Royal Yacht.



VICTORIA AND ALBERT (1899). 4700 tons. Dimensions: 380 (*p.p.*) \times 40 \times 18 feet (*mean draught*). Guns: 2—6 pdr. (bronze). H.P. 11,800 = 20 kts. Belleville boilers. Coal: *normal*, 350 tons; *maximum*, 2000 tons. Comp. 363.

Admiralty Yacht.



1920 Photo.

ENCHANTRESS (1903). 3470 tons. Dimensions: 320 \times 40 \times 15 feet. Guns: 4—3 pdr. H.P. 6400 = 18 kts. Yarrow boilers. Coal: 350 tons.

Note:—

Oilers (R.F.A.)

The first 22 of these Oil Tankers are at present under management.



BRITISH BEACON.

Photo, Abrahams, Devonport (added 1927).

Oilers (R.F.A.)—continued.

BRITISH BEACON, BRITISH LANTERN (both Workman Clark, 1918), **BRITISH STAR** (Swan Hunter, 1917). 6891, 6897 and 6888 tons *gross*, respectively. Dimensions: 430 \times 57 \times 26½ feet. Deadweight capacity: 9000 tons. Triple expansion engines and cylindrical boilers.

BRITISH LIGHT (Palmers, 1917). 6470 tons *gross*. Dimensions: 419½ \times 54½ \times 26 feet. Deadweight capacity: 8000 tons. Triple expansion engines and cylindrical boilers.



WAR BAHADUR.

Photo, Abrahams, Devonport (added 1927).



WAR KRISHNA.

Photo, Abrahams, Devonport (added 1927).

WAR AFRIDI (R. Duncan & Co., 1920), **WAR BAHADUR** (1918), **WAR MEHTAR** (1920), (both Armstrong); **WAR BRAHMIN** (1920), **WAR DIWAN** (1919), **WAR PINDARI** (1920), all three Lithgows; **WAR BHARATA** (1920), **WAR NAWAB** (1919), **WAR NIZAM** (1918), **WAR SUDRA** (1920), all four Palmers; **WAR HINDOO** (Hamilton, 1919); **WAR KRISHNA** (Swan Hunter, 1919); **WAR PATHAN** (1919), **WAR SIRDAR** (1920), both Sir J. Laing & Sons; **WAR SEPOY** (W. Gray & Co., 1919). 5518 to 5730 tons *gross*. Dimensions: 400 \times 52½ \times 25½ feet. Deadweight capacities vary from 6300 tons (*War Pindari*) to 8100 tons (*War Bahadur*). Triple expansion engines and cylindrical boilers.

Photo wanted.

OLEANDER (Pembroke D.Y., 1922), **OLNA** (Devonport D.Y., 1921). 7045 and 7023 tons *gross*, respectively. Dimensions: 430 × 57 × 26½ feet. Deadweight capacity: 10,000 tons. Triple expansion engines and cylindrical boilers.

Note.—*Olina* used for experiments with Oertz rudder, 1929.



DELPHINULA. Photo added 1927, by courtesy of Messrs. Armstrong.

DELPHINULA (ex-*Buyo Maru*, Armstrong, 1908). 4990 tons *gross*. Dimensions: 385 × 50½ × 24½ feet. Deadweight capacity: 6600 tons. Triple expansion engines and cylindrical boilers.



LEAF Type.

Photo added 1927.

APPLELEAF (ex-*Texol*) (Workman Clark), **CHERRYLEAF** (Sir R. Dixon & Co.), **PLUMLEAF** (ex-*Trinol*) (Swan Hunter), **BRAMBLELEAF** (Russell & Co.), **ORANGELEAF** (J. L. Thompson & Sons), **PEARLEAF** (W. Gray & Co.). All launched 1917. Displacement, 11,628 tons (from 5891 to 5927 tons *gross*). Dimensions: 405 × 54½ × 27½ feet. Triple expansion engines and cylindrical boilers. I.H.P. 6750 = kts. Deadweight capacity: First three, 5400 tons; second three, 5000 tons.

Oilers (R.F.A.)—continued.

DREDGOL (Simons, 1918). 7589 tons. Dimensions: 326 × 54½ × 18½ feet. I.H.P. 2500 = 11 kts. Own oil: 360 tons. Cylindrical boilers. Deadweight capacity: 4000 tons.



SERBOL.

1920 Photo, Gieves, Ltd.

FRANCOL (Earles S.B. Co.), **MONTENOL** (W. Gray), **SERBOL** (Caledon S.B. Co.). All details as *Belgol* below, but of different appearance. All launched 1917.



SLAVOL.

1920 Photo, Abrahams, Devonport.

BELGOL (Irvine's S.B. & D.D. Co.), **CELEROL** (Short Bros.), **FORTOL** (McMillan), **PRESTOL** (Napier & Miller), **RAPIDOL** (W. Gray), **SLAVOL** (Greenock D.Y. Co.). All launched 1917. 5049 tons. Dimensions: 335 × 41½ × 20½ feet. I.H.P. 3375 = 14 kts. Own oil: 300 tons. Cylindrical boilers. Complement, 39. Deadweight capacity: 2000 tons.



EBONOL.

1921 Photo, Seward, Weymouth.

BIRCHOL, **BOXOL** (Barclay, Curle), **EBONOL** (Clyde S.B. Co.), **ELDEROL**, **ELMOL** (Swan Hunter), **LARCHOL**, **LIMOL** (Lobnitz), **HICKOROL** (McMillan). All launched 1917. 2200 tons. Dimensions: 220 × 34½ × 13½ feet. Triple expansion engines and cylindrical boilers. I.H.P. 700 = 9 kts. Own oil: 40 tons. Complement, 19. Deadweight capacity: 1000 tons.

Oilers (R.F.A.)—continued.

DISTOL (W. Dobson & Co.), **PHILOL**, **SCOTOL** (Tyne Iron S. B. Co.), **KIMMEROL**, **VISCOL** (Craig, Taylor). All launched 1916. 2200 tons. Dimensions: 220 × 34½ × 12½ feet. I.H.P. 700 = 9 kts. Own oil: 40 tons. Cylindrical boilers. Complement, 19. Deadweight capacity: 1000 tons.

TREFOIL (Pembroke, 1913). 4500 tons. Dimensions: 280 × 39 × 18½ feet. 2 sets 6-cylinder 2-cycle Diesel engines B.H.P. 1500 = 12 kts. Deadweight capacity: 2000 tons. Own oil: 200 tons.



1921 Photo, Abrahams, Devonport.

TURMOIL (Pembroke, 1917). 4484 tons. Similar to *Trefoil*, above, but with reciprocating engines. Draught: 22 feet. I.H.P. 1800.



1920 Photo, Coates, Harwich.

MIXOL (Caledon S. B. & Eng. Co., 1916). **THERMOL** (Greenock D.Y. Co., 1916). 4326 tons. Dimensions: 270 × 38½ × 20½ feet. I.H.P. 1200 = 11 kts. Oil: 150 tons. Deadweight capacity: 2000 tons.



CAROL.

1921 Photo, Seward, Weymouth.

ATTENDANT (Chatham, 1913), **CAROL** (Devonport, 1913). 2178 tons. Dimensions: 200 × 34 × 13 feet. I.H.P. 450 = 8 kts. Coal: 60 tons. Deadweight capacity, 1000 tons.

Oilers (R.F.A.)—continued.



BURMA (Greenock D.Y. Co., 1911). 4116 tons. Dimensions: $270 \times 36\frac{1}{2} \times 18$ feet. H.P. 1200 = 11 kts. Deadweight capacity, 2000 tons oil fuel. Own fuel: 210 tons.



PETROLEUM.

Photo, Abrahams, Devonport (added 1927).

PETROLEUM (Swan, Hunter, 1903). 9700 tons. Dimensions: $370 \times 48\frac{3}{4} \times 24$ feet. H.P. 2000 = 13 kts. Own oil: 426 tons. Deadweight capacity, 6000 tons.

KHARKI (Irvine S. B. & Eng. Co., 1900). 1465 tons. Dimensions: $185 \times 29 \times 12$ feet. H.P. 775 = 13 kts. Fuel: 90 tons. Deadweight capacity, 680 tons.

Note.—Oiler *Ruthenia* is now fuel storage hulk at Singapore.

Petrol Carriers.



PETROBUS.

1920 Photo, G. Dott. Esq.

PETROBUS, PETRELLA, (Dunlop, Bremner, 1918). 1024 tons. Dimensions: $164 \times 28 \times 11\frac{1}{2}$ feet. I.H.P. 500 = 9.10 kts. Deadweight capacity: 300 tons. Own oil: 50 tons. Cylindrical boilers. Complement, 16.

Water Carrier.

PETRONEL. As *Petrobus*, *Petrella*, just above.

Distilling Vessel & Store Carrier (R.F.A.).



1920 Photo, Abrahams, Devonport.

BACCHUS (Hamilton & Co., 1915, purchased 1915). About 3500 tons. Dimensions: $295 \times 44 \times 12\frac{1}{2}$ feet. I.H.P. = kts. Coal: 873 tons. 2000 tons capacity.

Fleet Supply Ship.



PERTSHIRE.

1927 Photo, Cassar, Malta.

PERTSHIRE (Hawthorn Leslie, 1893). 9336 tons. 5865 tons gross. Dimensions: $420 \times 54 \times 29$ feet. I.H.P. 3400 = 11 kts. Cargo capacity, 3400 tons. Own fuel: 300 tons.

Store Carriers.

ARGO (J. Shearer & Sons, Ltd., 1906). Tonnage: 854 gross. Capacity: 1250 tons. Dimensions: $198 \times 30 \times 11\frac{1}{2}$ feet. I.H.P. 1000.

BISON. Tonnage: 760 (displacement). I.H.P. 500.

ISLEFORD (Ardrossan D.D. Co., 1913). Tonnage: 414 (gross). Dimensions: $149\frac{3}{4} \times 25\frac{1}{2} \times 10$ feet. Oil engines. I.H.P. 450. 1 screw.

JOHN EVELYN. Tonnage: 435 gross. I.H.P. 500.

*JOYCE.

*LUCY.

*MARCHWOOD.

Tonnage: 140 (displacement). Dimensions: $81\frac{1}{2} \times 16\frac{1}{2} \times 8$ feet. I.H.P. 280 = 8 kts.

UPNOR. Tonnage: 600 (displacement). I.H.P. 300.

* Also fitted for towing.

Hospital Ship (R.F.A.)

MAINE (ex P. S. N. Co. liner *Panama*, built by Fairfield, 1902, purchased 1920 for conversion). Displacement: 10,100 tons (4035 tons net, 6599 tons gross). Dimensions: 401 ft. 2 in. \times 58 ft. 4 in. \times 23 ft. 7 in. I.H.P. 4000 = 13 kts. Triple expansion engines. 2 double-ended and 2 single-ended boilers. Coal: 1300 tons.

Surveying Vessels.



ORMONDE (HERALD similar; 1924 Photo, Abrahams, Devonport. IROQUOIS has shorter funnel).

IROQUOIS (Barclay, Curle, 1918), **ORMONDE** (1918), **HERALD** (ex *Merry Hampton*, 1918), both by Blyth S.B. Co. Converted Minesweepers of "24" (Racehorse) class. 1320 tons. Dimensions: $276\frac{1}{2} \times 35 \times 12$ feet. Guns: 1—3 pdr. I.H.P. 2500 = 17 kts. Coal: 260 tons. Cylindrical Boilers.

Note.—All converted by Devonport D.Y., 1922-23. Sister ship *Moresby* has been transferred to R. Australian Navy 1925.

Surveying Vessels—continued.



KELLETT.

1924 Photo, Abrahams, Devonport.

BEAUFORT (1919), by Ailsa S.B. Co. **FITZROY** (1919), **FLINDERS** (1919), both by Lobnitz & Co. **KELLETT** (1919), by Simons & Co. Converted Twin Screw Minesweepers of "Hunt Class." 800 tons. Dimensions: 231 (o.a.) × 28 ft. 7½ in. × 7½ feet. Guns: 1—3 pdr. I.H.P. 2200 = 16 kts. Machinery: Vertical triple expansion. 2 screws. Boilers: Babcock or Yarrow. Coal: 185 tons. Complement, 88.

Note.—*Protea*, of this type, transferred to S. Africa, 1921.



1924 Photo, Abrahams, Devonport.

ENDEAVOUR (Fairfield, 1912). 1280 tons. Dimensions: 241½ (o.a.) × 34 ft. 2 in. × 11½ feet. Guns: 1—3 pdr., 1 M.G. H.P. 1100 = 13 kts. Coal: 220 tons. Complement, 140. Specially built for Hydrographic Duties.

Target Service Ship.



CENTURION.

1928 Photo, C. Cozens.

CENTURION (Devonport D.Y., Nov. 18th, 1911). Ex-battleship, converted for service as wireless controlled Target Ship in replacement of *Agamemnon* by Chatham D.Y., 1926-27, at a cost of £358,088. Displacement, 23,000 tons. Dimensions: 589½ (w.l.) × 89 × 30½ feet (max. draught). Guns: Rendered ineffective on conversion or removed. Machinery: Parsons turbines. Boilers: 18 Yarrow. Designed H.P. 27,000 = 21 kts. Coal: 3150 tons, plus 850 tons oil. Begun under 1910 Estimates, completed 1913, and removed from Effective List in 1926, under conditions of Washington Treaty.

Note.—Other vessels employed in connection with Target Service include Sloops **CHRYSANthemum** and **SNAP-DRAGON**; Submarine **L 6**; Trawlers **MOY** and **OUSE**; Fleet Tugs **ST. CYRUS**, **ST. FAGAN**, **ST. GENNY**, **ST. ISSEY** and **ST. MARTIN**—all described and illustrated on other pages, under their respective classes.

1 Whaler.



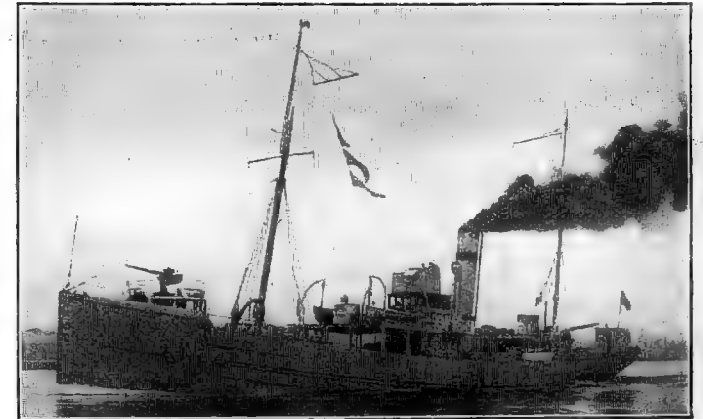
1925 Photo, Abrahams, Weymouth.

CACHALOT, Emergency War Programme. Built 1915, by Smiths Dock Co. 336 tons. (237 tons gross.) Dimensions: 139½ × 25 × 6½ feet. Guns: 1—12 pdr. (not mounted at present). H.P. 1000 = 12-13 kts. Coal: 60 tons. Complement, 26.

15 Trawlers.

(See also *Vernon* and *Kate Lewis*, listed under Minesweepers).

Note.—Those marked * are rated as "Fishery Protection Gunboats," have black topped funnels, and carry 1—12 pdr. *Pembroke* has same armament, plus 2—3 pdr. *Colne* has bowsprit and bow walk.



"MERSEY" TYPE.

1926 Photo, Abrahams & Sons, Devonport.



EXCELLENT.

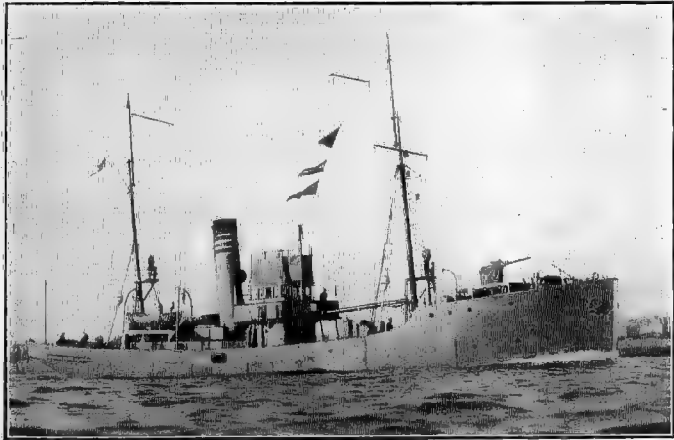
1928 Photo, C. Cozens.

Blackwater (ex-William Inwood).	James Ludford .
* Boyne (ex-William Jones).	Moy (ex-Alexander Hills).
* Cherwell (ex-James Jones).	Ouse (ex-Andrew King).
* Colne (ex-Isaac Chant).	Pembroke (ex-Stour, ex-Daniel Fearall).
* Doon (ex-Fraser Evans).	
Excellent (ex-Nith, ex-Andrew Jewer).	

All belong to "Mersey" type (designed by Messrs. Cochrane & Sons, Ltd., Selby, 1917-18). All built by Messrs. Cochrane, except *Colne* and *James Ludford*, by Lobnitz. Displacement: 665 tons (324 tons gross). Dimensions: 133½ (p.p.) × 23½ × 13½ feet. Triple expansion engines. 1 boiler. I.H.P. 550 = 11 kts. Coal: 204 tons. *Boyne*, *Cherwell*, are R.N.R. mine-sweeping instructional vessels; *Moy*, *Ouse*, are on Fleet Target Service.

BRITISH—Trawlers, Drifters, Tugs.

Trawlers.—continued.



"DEE" TYPE. 1926 Photo, Gieves, Ltd., Portsmouth.

- *Dee (ex-T 16, ex-Battleaxe). *Kennet (ex-T 17, ex-Iceaxe).
*Garry (ex-T 13, ex-Goldaxe). *Liffey (ex-T 14, ex-Stoneaxe).

Ex-Russian Trawlers, designed and built by Smiths Dock Co., Ltd., 1916. Displacement: about 500 tons. (292 tons gross). Dimensions: 130 (p.p.) × 23½ × 13½ feet. I.H.P. 490 = 10.5 kts. Coal: 140 tons.

ROBERT CLOUGHTON (1917). "Castle" type, designed by Smiths Dock Co., Ltd., and built by Bow, McLachlan & Co., Ltd., 547 tons. (273 tons gross.) Dimensions: 125 (p.p.) × 22½ × 12½ feet. I.H.P. 480 = 10.5 kts. Coal: 164 tons.

BRITISH NAVY—TRAWLERS, DRIFTERS, TUGS.

29 Drifters.

(All built of steel except those marked with an asterisk, which are believed to be wood. Those marked † are on Fleet Auxiliary List).

- | | |
|-----------------------|---------------------|
| *Anticyclone. | Landfall. |
| Billow. | Leeward. |
| Cascade. | †Loraine. |
| Cloud. | Lunar Bow. |
| Cold Snap. | Mist. |
| Crescent Moon. | Noontide. |
| *Ebbtide (ex-C.D. 1). | †Onyx (ex-C.D. 82). |
| Eddy. | Seabreeze. |
| *Flat Calm. | Sheen. |
| Flicker. | *Shooting Star. |
| *Fumarole. | Shower. |
| †Glitter. | *Silhouette. |
| Halo. | Sundown. |
| Harmattan. | Sunset. |
| Horizon. | Whirlpool. |
| Indian Summer. | |

Displace 199 tons (except ex-C.D. type, 150 tons). Dimensions: 87 × 19½ × 9½ feet. I.H.P. 270 = 9 kts. Gun: Usually 1—6 pdr. or 3 pdr. Coal: 31-39 tons.

Note.—Cascade lent to Air Ministry, 1928.

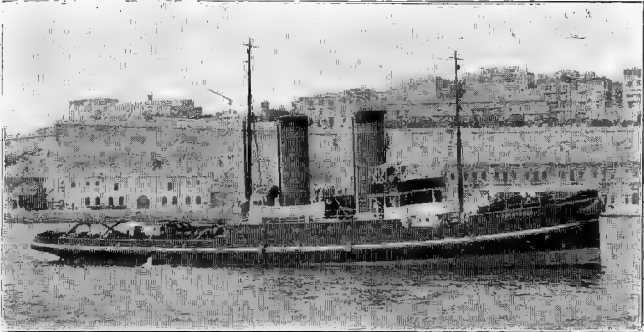
19 Fleet Tugs.



Photo wanted.

JAUNTY (Ritchie, Graham, Milne, 1920). 606 tons gross. Dimensions: 155 × 31 × 17 feet. 1 screw. I.H.P. 2000 = 12 kts.

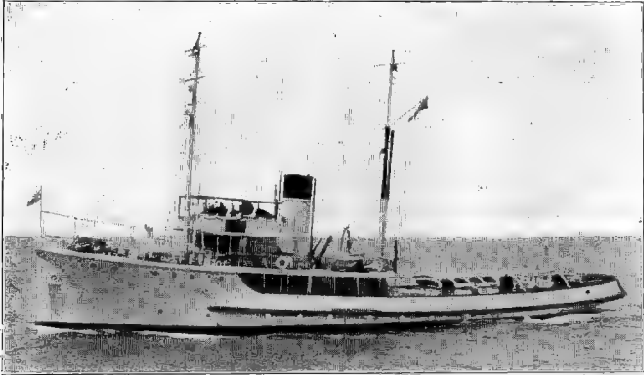
Fleet Tugs.—continued.



ROYSTERER. 1929 Photo, R. Tunnye, Esq.

4 ROLLCALL TYPE.

RESOLVE, RESPOND (both by Ayrshire D.Y. Co.), **RETORT** (Day, Summers & Co.), **ROYSTERER** (Thornycroft.) Built 1918-19. About 825 tons gross. Dimensions: 175 × 34 × 17 (maximum draught). 2 screws. I.H.P., 2,500 = 14 kts.



1929 Photo, R. Tunnye, Esq. (Some have black-topped funnels; are mostly differentiated by funnel bands).

15 "RESCUE" TYPE (SAINT CLASS).

ST. ABBES, ST. BLAZEY, ST. BREOCK, ST. CLEARS, ST. CYRUS, ST. DAY, ST. DOGMAEL, ST. FAGAN, ST. GENNY, ST. ISSEY, ST. JUST, ST. MARTIN, ST. MELLONS, ST. MONANCE, ST. OMAR. Built by various yards, 1918-19. About 425 tons gross. Dimensions: 135 × 30 × 14½ feet (maximum draught), 1 screw. I.H.P., 1,250 = 12 kts. Coal: 240 tons.

Note.—St. Cyrus, St. Fagan, St. Genny, St. Issey, St. Martin, employed for Target Towing, others on Fleet Auxiliary List. Another of this type, Toia (ex St. Boniface) transferred to New Zealand.

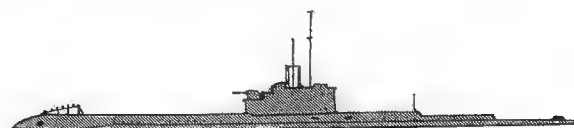
COMMONWEALTH OF AUSTRALIA.

Silhouettes—AUSTRALIA

ROYAL AUSTRALIAN NAVY.

Scale : 125 feet to 1 inch.

SUBMARINES AND TORPEDO CRAFT.



OTWAY, OXLEY.



Huon class (2).

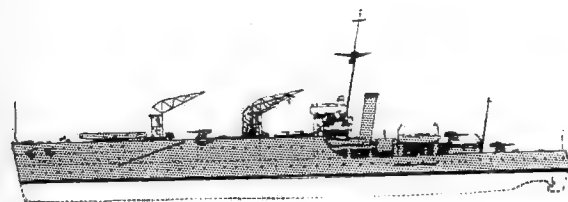


Tasmania class (5).



Anzac.

CRUISERS, SLOOPS & MISCELLANEOUS.



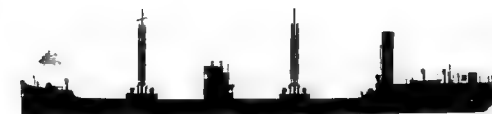
ALBATROSS.



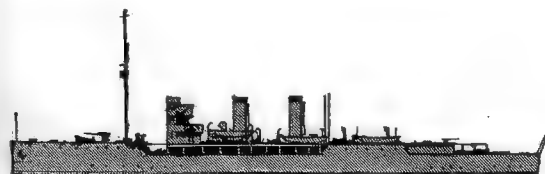
PLATYPUS.



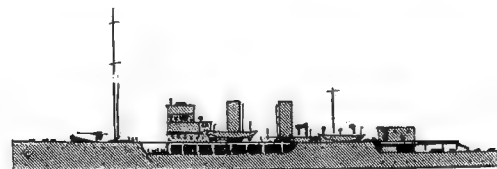
KURUMBA.



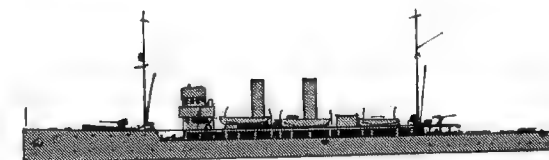
BILOELA.



MARGUERITE.



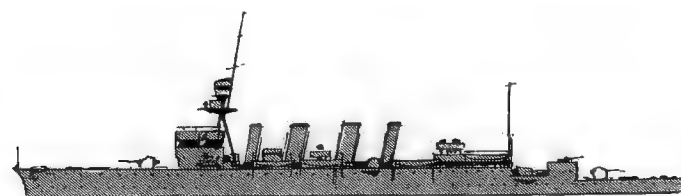
GERANIUM.



MALLOW.



BRISBANE.



ADELAIDE.



AUSTRALIA, CANBERRA.

AUSTRALIA—Cruisers.

Seagoing Ships in Commission, 1929 (excluding Harbour Training Service).

Cruisers: **AUSTRALIA** (flagship), **CANBERRA**.

Seaplane Carrier: **ALBATROSS**.

Sloop: **MARGUERITE**.

Depôt and Repair Ship: **PLATYPUS**.

Submarines: **OTWAY**, **OXLEY**.

Flotilla Leader: **ANZAC**.

Destroyers: **SUCCESS**, **SWORDSMAN**.

Surveying Vessel: **MORESBY**.

Australian Naval Board.

President: Major-Gen. Sir Thos. W. Glasgow, K.C.B., C.M.G., D.S.O.
(Minister of State for Defence).

1st Naval Member: Rear-Admiral W. M. Kerr, C.B., C.B.E.

2nd Naval Member: Captain H. J. Feakes, R.A.N.

Finance and Civil Member: Mr. T. J. Thomas, O.B.E.

Secretary: Hon. Paymaster Commander G. L. Macandie, C.B.E.

Commanding Australian Squadron.

Rear-Admiral E. R. G. R. Evans, C.B., D.S.O.



AUSTRALIA.

1925 CRUISERS.

AUSTRALIA (17th March, 1927),

CANBERRA (31st May, 1927).

"Standard" displacement, 10,000 tons. (13,630 *deep load*). Complement, 679. (710 as flagship).

Length 'p.p.', 516 feet (o.a.), 630 feet. Beam, 68½ feet. Draught, 16½ feet (*mean*).

Guns:

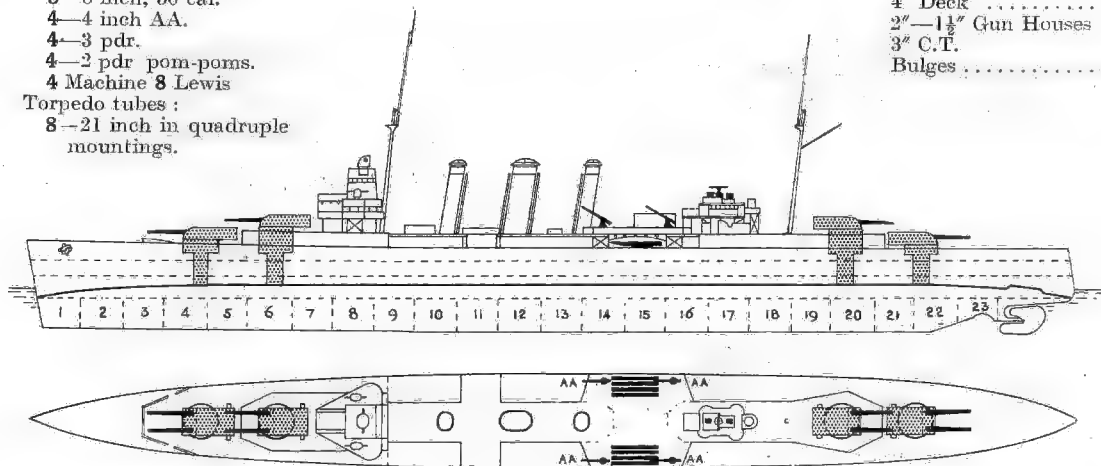
8—8 inch, 50 cal.
4—4 inch AA.
4—3 pdr.
4—2 pdr pom-poms.
4 Machine 8 Lewis

Torpedo tubes:

8—21 inch in quadruple mountings.

Armour:

4" Deck
2"—1½" Gun Houses
3" C.T.
Bulges



Machinery: Brown-Curtis geared turbines. 4 screws. Designed S.H.P. 80,000 = 31.5 kts. Boilers: 8 Yarrow. Oil fuel: 3400 tons. Radius at full speed, 2,300 miles; at economical speed (11—14 kts.), 10,400 miles.

General Notes.—Sisters to *Kent* class, in British Navy Section. Designed by Sir E. H. Tennyson d'Eyncourt. Laid down by John Brown & Co., Ltd., Clydebank, in 1925, and completed in April and July, 1928, respectively. (See also detailed notes under British *Kent* class, which apply to these two ships).

AUSTRALIAN NAVY—1913-15 CRUISERS.

Cruisers—AUSTRALIA



ADELAIDE.

1924 Photo, W. W. Stewart, Esq.

ADELAIDE (July, 1918).

Displacement, 5560 tons. Complement, 470.

Length (o.a.), 462½ feet. Beam, 49½ feet. Draught, 15½ feet (mean), 17¾—19 (max.)

Guns (Dir. Con.):

9—6 inch, 50 cal.
1—3 inch AA.
4—3 pdr.
2 M.G., 8 Lewis.

Armour:

2" Deck (on slopes).
3" (on sides).

For plan v. British *Birmingham* type

Torpedo tubes (21 inch):
2 submerged (broadside).

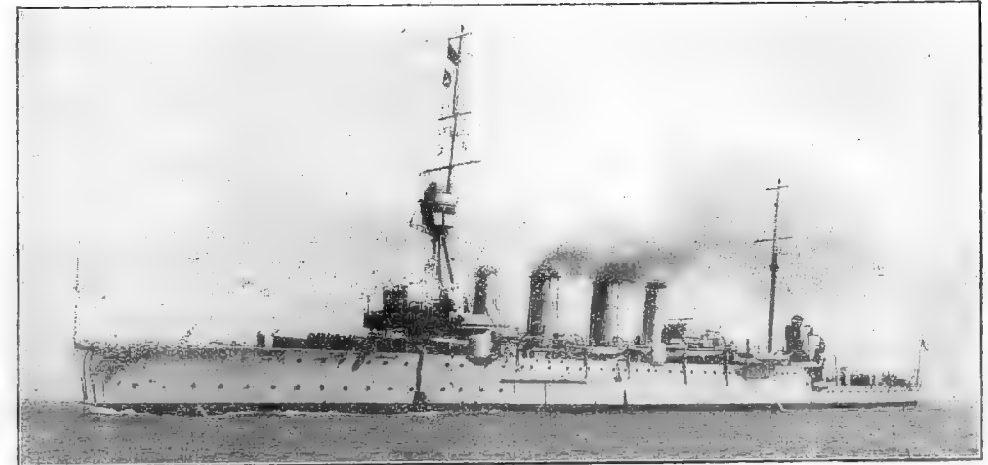
Machinery: Parsons turbines. Boilers: Yarrow, ½ oil, ¾ coal burning. Designed S.H.P. 25,000=25 kts. Coal: normal, tons; maximum, 860 tons. Oil fuel: 550 tons. 2 screws.

Notes.—Laid down at Cockatoo Navy Yard, Sydney, in 1915. Generally follows British *Birmingham* designs. Cost £1,271,782 to build.

Gunnery Notes.—Electric Ammunition Hoists, dredger type. Reported 6 inch guns have up to 40° elevation.

Torpedo Notes.—7 Torpedoes carried. 4 Searchlights.

Name	Builder	Machinery	Laid down	Completed	Trials: 30 hrs. at ½ 8 hrs. full power	Boilers	Best recent speed
Brisbane Adelaide	Sydney Sydney	Vickers Sydney	Jan. 13 1915	Nov. '16 5 Aug '22	24,649=25.67	Yarrow "	



1926 Photo, Cribb, Southsea.

BRISBANE (30th Sept., 1915).

Displacement, 5400 tons. Complement, 391.

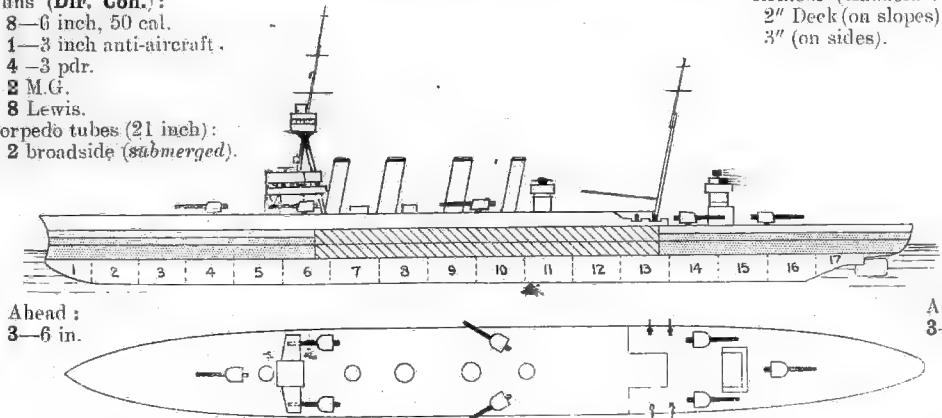
Length (p.p.), 430 feet. Beam, 49½ feet. { Mean draught, 15½ feet.
Mar. " 17¾—18½ feet. } Length (over all), 457 feet.

Guns (Dir. Con.):

8—6 inch, 50 cal.
1—3 inch anti-aircraft.
4—3 pdr.
2 M.G.
8 Lewis.

Torpedo tubes (21 inch):
2 broadside (submerged).

Armour (Hadfield):
2" Deck (on slopes).
3" (on sides).



Ahead:
3—6 in.

Astern:
3—6 in.

Broadside: 5—6 in., 1—21 in. torpedo tube.

Machinery: Parsons turbine. 4 screws. Boilers: Yarrow. Designed H.P. 22,000, (n.d.) 25,000 f.d. = 25.5 kts. Coal: normal 750 tons, maximum, 1196 coal+260 oil.

Gunnery Notes.—Electric ammunition hoists. Torpedo Notes.—7 torpedoes carried. 4 searchlights.

Armour Notes.—Internal protection by longitudinal and transverse bulkheads. Double bottom extends over magazine and machinery spaces.

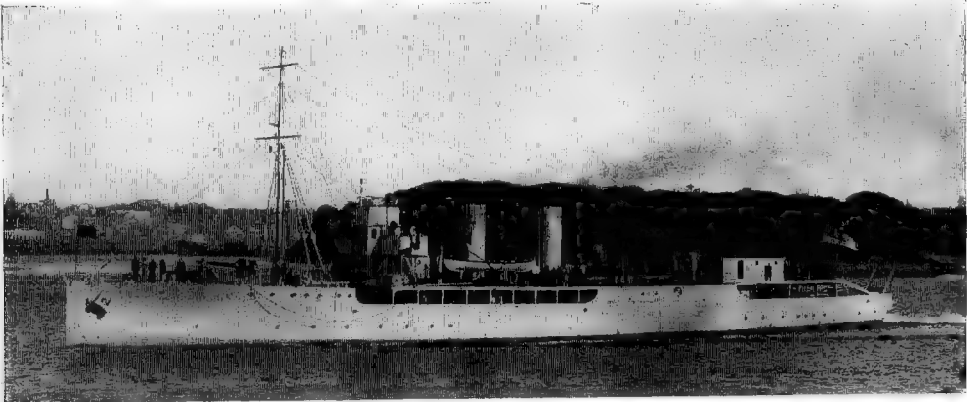
Engineering Notes.—500 r.p.m.=full power. Boilers: 3 drum small tube type. Uniflux condensers.

Note.—Brisbane refitted, 1926-28. Sister ships Melbourne and Sydney removed from effective list, 1928.

AUSTRALIA—Sloops and Destroyers.

AUSTRALIAN NAVY—SLOOPS AND DESTROYERS.

Fleet Sweeping Vessels (Sloops).



GERANIUM.

R.A.N. Official Photo, 1922.



MARGUERITE.

Photo added 1926.

GERANIUM (Greenock Dockyard Co. Begun Aug., 1915; launched 8th Nov., 1915; completed March, 1916). **MARGUERITE** (Dunlop, Bremner. Begun July, 1915; launched 23rd Nov., 1915; completed Jan., 1916). Fleet Sweeping Vessels (Sloops) of *Arabis* type. 1250 tons. Dimensions: 255½ (p.p.), 267½ (o.a.) × 33½ × 11 feet (mean), 11½ (max. draught). Guns: 1—4·7 inch, 2—3 pdr. A.A. in *Geranium*, 1—4 inch, 2—3 pdr. in *Marguerite*. Designed I.H.P. 2000=16·5 kts. Trials: *Geranium*, 2312=17; *Marguerite*, 2309=16·1. Machinery: boilers, screws, as *Mallow*. Coal: 270 tons *Geranium*, 256 tons *Marguerite*=2050 miles at 15 kts. Complement, 79. Built under Emergency War Programme; presented to Australian Navy, 1919. *Geranium* has recently been employed on surveying work.

(Appearance as Silhouette).

MALLOW (Barclay Curle. Launched 13th July, 1915; completed Sept., 1916.) Fleet Sweeping Vessel (Sloop) of *Acacia* type. 1200 tons. Dimensions: 250 (p.p.), 262½ (o.a.) × 33 × 11 feet (mean), 11½ (max. load). Guns: 1—12 pdr. (12 cwt.), 1—3 pdr. I.H.P. 1800=16·5 kts. Trials: 2328=16·3 kts. Machinery: 1 set triple expansion inverted and 2 cylindrical boilers. Coal: 250 tons=2000 miles at 15 kts. Complement, 77. Built under Emergency War Programme; presented to the Australian Navy, 1919.

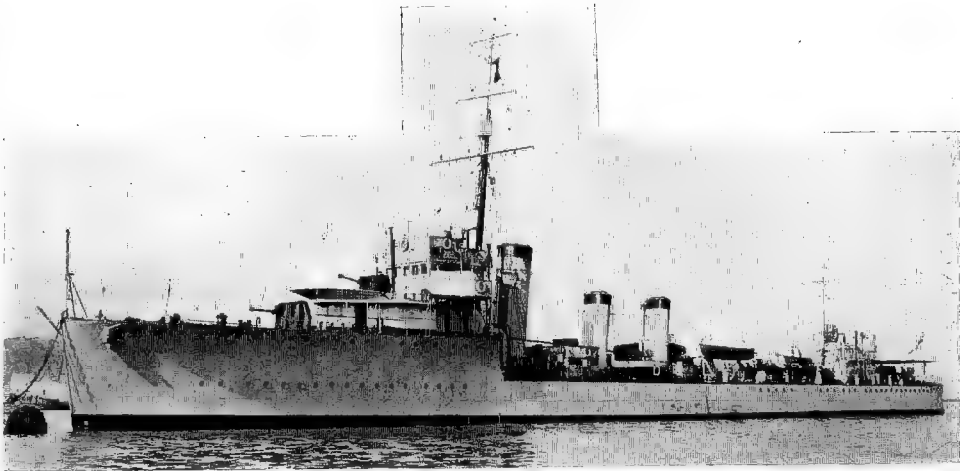
8 Flotilla Leaders and Destroyers.

No.	Type	Date	Dis- place- ment	S.H.P.	Speed	Oil	Com- ple- ment	Tubes	Max. draught
1	<i>Anzac</i>	'16-'17	tons 1666	36,000 t	kts. 34	tons 416/515	122	4	12
5	<i>Admiralty "S"</i>	'17-'19	1075	27,000	36	254/301	90	4	12
2	<i>Parramatta</i>	'15-'16	700	11,300 t	26	173/157	70	3	8½—9

Note.—For Pendant Numbers, vide British Navy section, under Destroyers.

Flotilla Leader.

1 *Kempenfelt* Type.



1920 Photo, Abrahams, Devonport.

1 *Denny*: **Anzac**. 1,666 tons. Dimensions: 315 ft. (p.p.), 325 ft. (o.a.) × 31 ft. 10 in. × 12 ft. 1½ in. (max. draught aft). Guns: 4—4 inch, 2—2 pdr. pom-poms, 1 M.G., 4 Lewis. Torpedo tubes: 4—21 inch in 2 rev. deck mountings. Machinery: Brown-Curtis turbines. 3 screws. Boilers: Yarrow small tube. Designed S.H.P. 36,000 = 34 kts. Oil, 416/515 tons=about 2500 miles at 15 kts. Complement, 122. Begun January 31st, 1916. Launched January 11th, 1917. Completed April 24th, 1917. Begun under Emergency War Programme and presented to Australia, 1919. Sister to *Seymour*, &c., of British Navy.

AUSTRALIAN NAVY.—DESTROYERS.

T.B.D.—AUSTRALIA

Destroyers.

5 "Admiralty S" type.



TASMANIA.

R.A.N. Official Photograph, 1922.

2 Beardmore: **Tasmania, Tattoo.**

1 Doxford: **Success.**

1 Scott: **Swordsman.**

1 Swan Hunter: **Stalwart.**

1075 tons. Dimensions: 265 (p.p.), 276 (o.a., Success 277) \times 26 $\frac{1}{2}$ \times 10 $\frac{5}{8}$ feet (mean) draught. Armament: 3—4 inch (Mk. IV with 30° elevation Dir. Cox.), 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. 4—21 inch tubes in two twin deck mountings, 1—24 inch searchlight controlled in unison with guns. Machinery: Brown-Curtis all-geared turbines. 2 screws. Boilers: 3 Yarrow small tube. Designed S.H.P. 27,000 = 36 kts. Fuel (oil only): 254/301 tons = about 2000 miles at 15 kts. Complement, 90.

	Begun.	Launch.	Comp.		Begun.	Launch.	Comp.
Tasmania ..	18/12/17	22/11/18	29/1/19	Swordsman ..	1917	28/12/18	4/19
Tattoo ..	21/12/17	28/12/18	3/19	Stalwart ..	4/18	23/10/18	4/19
Success ..	1917	29/6/18	4/19				

Notes.—Built under Emergency War Programme and presented to Australian Navy, 1919. For any further notes, refer to description of "Admiralty S Class" in British Navy Section.

Destroyers—continued.

2 "Parramatta" type.

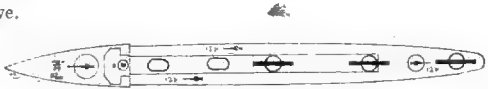


HUON.

R.A.N. Official Photograph, 1922.

Huon (ex *Derwent*, 1914), **Torrens** (Aug., 1915). Displacement: 700 tons. Dimensions: Length (o.a.) 250 $\frac{1}{2}$ \times 24 $\frac{1}{2}$ \times 7 $\frac{1}{2}$ feet. Armaments. 1—4 inch, 3—12 pdrs., 1 M.G., 4 Lewis. 3—18 inch tubes. Parsons turbines. Yarrow boilers. Radius: 2500 kts. Oil fuel (in tons): 173'8 (peace); 157'3 (war). **Huon** and **Torrens** built at Cockatoo N.Y., Sydney. Are modified British "I" Class boats. For other details v. Table. † sister ships removed from effective list for scrapping, 1929.

Note.—Both are now in reserve.



AUSTRALIA—Aircraft Tender.

AUSTRALIAN NAVY—AIRCRAFT TENDER.

ALBATROSS (Feb. 21st, 1928).

Standard Displacement 6000 }
Normal " 6500 } tons. Complement 450.
Full load " over 7000 }

Length (p.p.) 422 ft., (o.a.) 443½ ft.

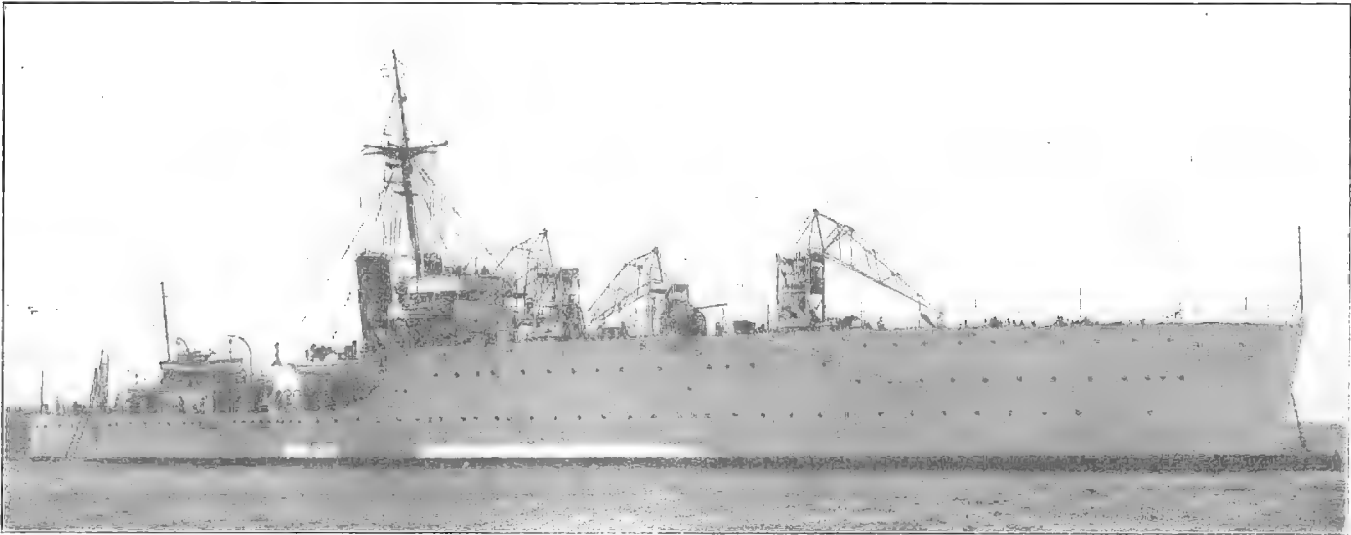
Beam, 58 ft., (60½ ft. extreme). Draught, 16½ ft.

Guns:

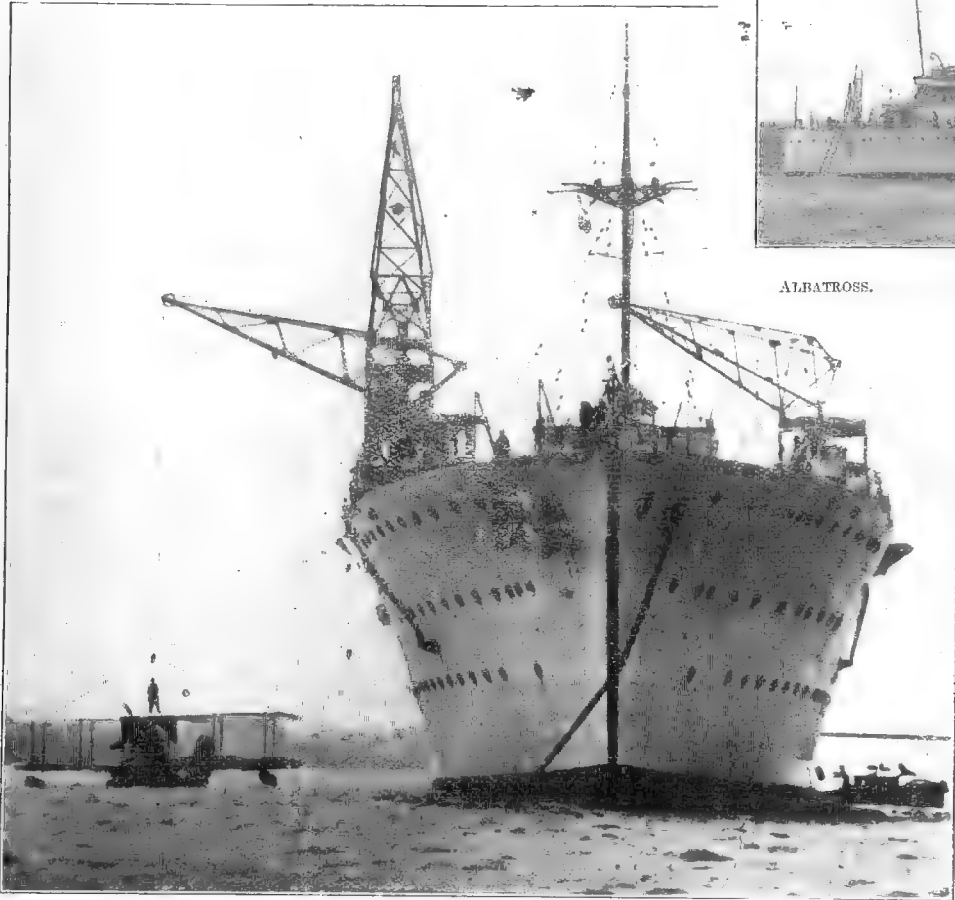
4—4.7 inch A.A.

2—2 pdr. pom-pom AA.

Accommodation for 9 seaplanes. (At present 6 Fairey machines are carried).



ALBATROSS.

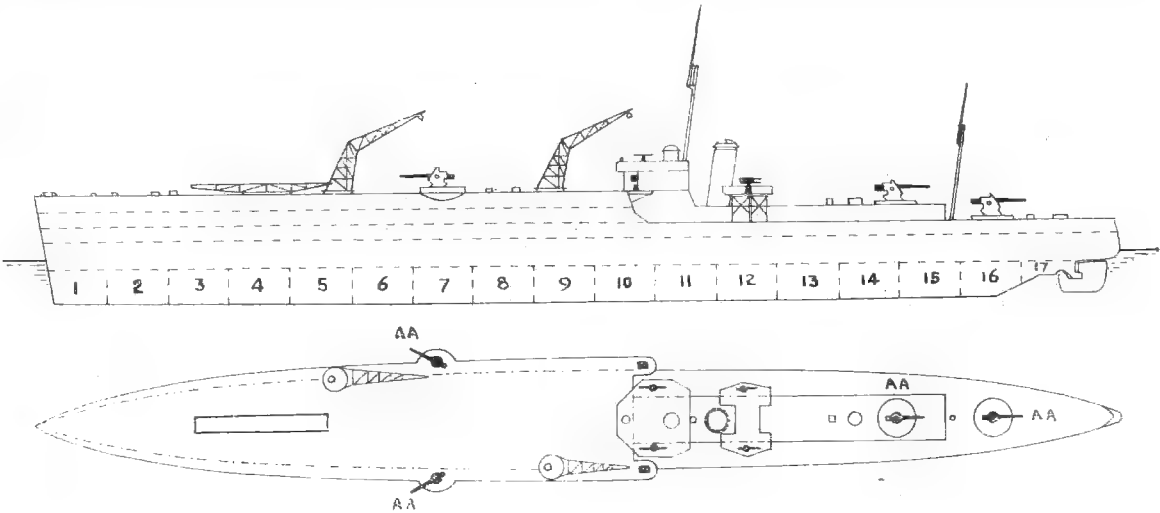


ALBATROSS.

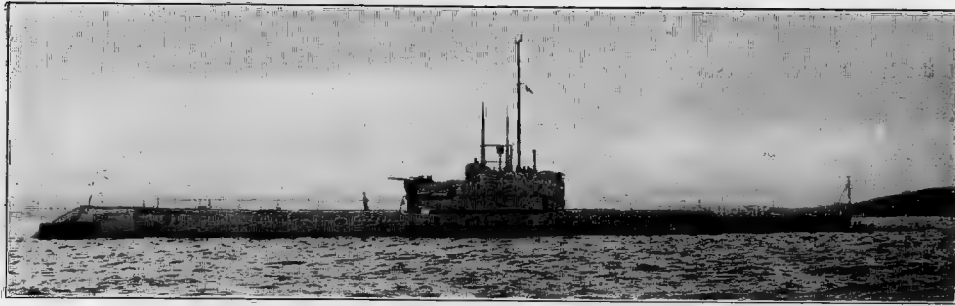
1929 Photo.

Machinery: Parsons geared turbines. 2 screws. Designed H.P. 12,000 $\frac{5}{2}$ 20 kts. Boilers: 4 Yarrow. Oil fuel 997 tons.

General Notes.—Laid down at Cockatoo Yard, Sydney, in April, 1926, and completed at end of 1928. Cost has been reported as £1,300,000 without armament and equipment. Trials, Dec., 1928, gave 22.5 kts. maximum with 12,910 H.P. Officially described as a "Seaplane Carrier." Cranes can be folded down level with deck.



2 Submarines.

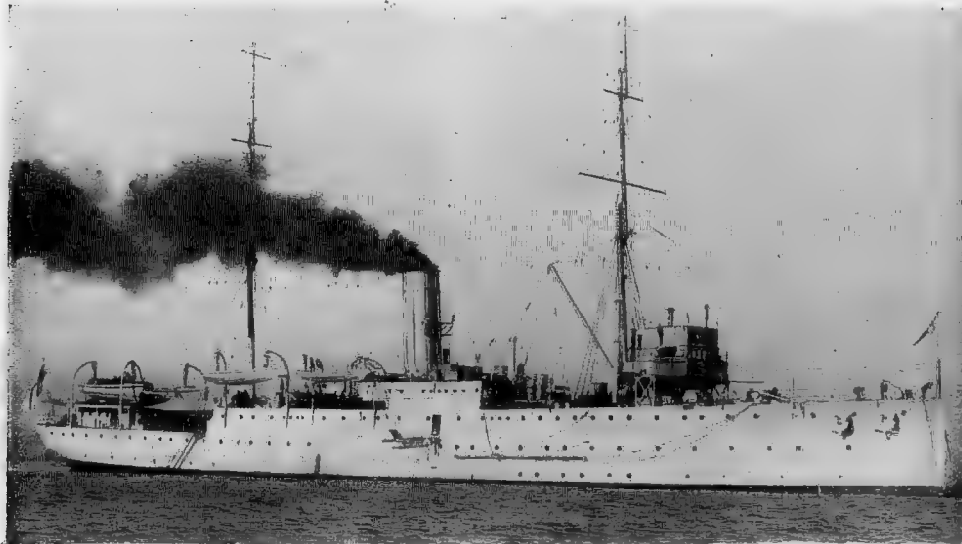


OXLEY. (Signal mast probably removed now.)

1928 Photo, R. Perkins, Esq.

Oxley (ex-AO 1, June 30th, 1926), **Otway** (ex-AO 2, Sept. 7th, 1926). Both built by Messrs. Vickers, Ltd., from whom they were ordered in March, 1925. $14\frac{2}{3}$ tons. Guns: 1—4 inch in armoured position. Tubes: 6—21 inch (bow), 2—21 inch (stern). H.P. $\frac{2000}{1835} = \frac{15.5}{9}$ kts. Fuel: 200 tons. Identical in most respects with O' type, in the British Navy Section. Both completed in 1927. On voyage to Australia these vessels encountered heavy weather in the Bay of Biscay which severely strained the engine columns. They were detained at Malta from Feb. to Nov., 1928, to enable their engine columns to be rebuilt.

Depot and Repair Ship.



PLATYPUS.

R.A.N. Official Photo, 1922.

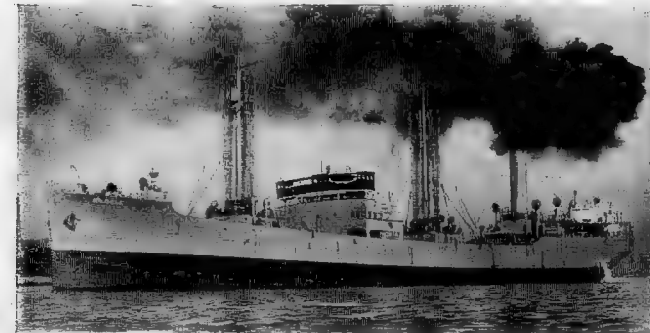
PLATYPUS (J. Brown, Clydebank. Begun Sept. 2nd, 1914; launched Oct. 28th, 1916; completed Mar., 1917.) 3476 tons. Dimensions: 310 (*w.l.*), 325 (*o.a.*) \times 44 \times 15 $\frac{3}{4}$ feet. (*max.* draught). Guns: *nil.* I.H.P. 2650 = 15 $\frac{1}{2}$ kts. Two sets triple expansion reciprocating engines and 4 cylindrical return-tube boilers. 2 screws. Coal: 450 tons. Complement, 357. Serves as Destroyer and Submarine Depot Ship and Fleet Repair Ship.

Surveying Vessel.

Appearance similar to *Ormonde*, in British Navy section.

MORESBY (ex-*Silvio*, Barclay, Curle & Co., 1918). Ex-Minesweeper of "24" (*Racehorse*) class, converted by Pembroke D.Y., 1924-25. 1320 tons. Dimensions: 276 $\frac{1}{2}$ (*o.a.*) \times 35 \times 12 feet. Guns: 1—3 pdr. I.H.P. 2500 = 17 kts. Cylindrical boilers. Coal: 260 tons.

Miscellaneous.



BILOELA.

R.A.N. 1922 Official Photo.

BILOELA. Fleet Collier, built at Cockatoo Island D.Y. Completed 1920. 9,700 tons. 382 \times 54 \times 22 $\frac{1}{2}$ feet. H.P. 2300 = 11 kts. Carries 4000 tons coal, 1250 tons oil; 50 tons fresh water. Own coal, 1000 tons. Triple expansion engines. 1 screw. Mountings for 4 in. B.L. guns. Complement, 70. The first ship built of entirely Australian materials and from Australian designs.

KURUMBA (Swan Hunter. Begun Sept., 1915; launched Sept., 1916; completed Jan., 1917; machinery by Wallsend Slipway and Engineering Co.) Oil Tanker. 7806 tons. Dimensions: 365 (*p.p.*), 377 $\frac{1}{2}$ (*o.a.*) \times 45 $\frac{1}{2}$ \times 23 $\frac{1}{4}$ feet *max.* load draught. Guns: 3 (calibre not known). I.H.P. 2000 = 10 kts. Triple expansion engines and S.E. cylindrical boilers. 2 screws. Fuel: *max.*, 688 tons coal + 257 tons oil, exclusive of cargo—3970 tons d.w.c. Complement, 65–100.

MOMBAH. (1921). Floating Coal Depôt Vessel. Dimensions: 315 \times 50 \times 23.

CERBERUS (ex-*Kooranga*). Motor vessel. 61 tons. H.P. 200. 1 screw. Guns: 2—4 inch, 2—12 pdr., 4—3 pdr. Serves as tender to Flinders Naval Depôt, Waterport.

R.I.M.

ROYAL INDIAN MARINE.

Officially Revised, 1927, by courtesy of the Director of the Royal Indian Marine, Bombay.

Flag Officer Commanding and Director R.I.M. : Rear-Admiral H. T. Walwyn, C.B., D.S.O.

Flags—Vessels of R.I.M., fly red pennant as Page 8, Admiralty Flag Book. Director R.I.M. when afloat flies broad red pennant, charged with a Cross in gold, and in first canton a lion rampant.

Scale : 1 inch = 160 feet.

RECOGNITION SILHOUETTES.



PALINURUS.



INVESTIGATOR.



CORNWALLIS.
(Now has maintopmast.)



LAWRENCE.



CLIVE.



BALUCHI & PATHAN.

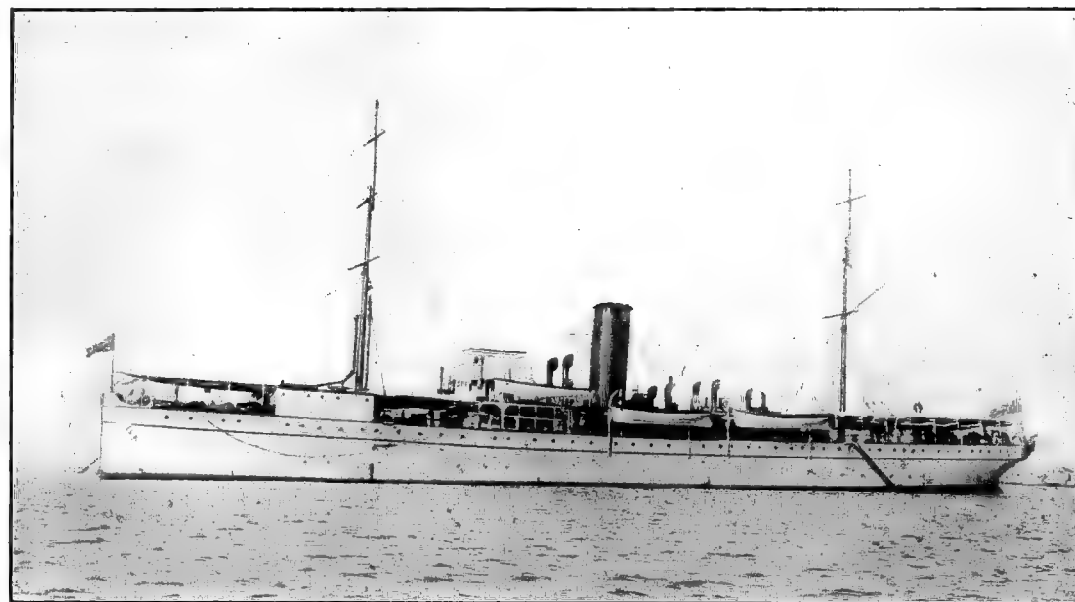
New Construction.

A new Sloop to be named *Hindustan* is being built for the Royal Indian Marine by Messrs. Swan, Hunter & Wigham Richardson, Ltd., at Wallsend-on-Tyne, under Admiralty supervision. She was laid down in 1929, and will be identical in most respects with British *Folkestone* type, with armament of 2—4 inch and 4—3 pdr.

Special Note.

The Government of India has decided to complete the reconstruction of the R.I.M. in accordance with the recommendations of the Departmental Committee of 1925, but the force will not have the right to be called the Royal Indian Navy. It will, however, become a combatant force and will assume the functions and serve under the conditions which were originally intended for the Royal Indian Navy.

Sloop.

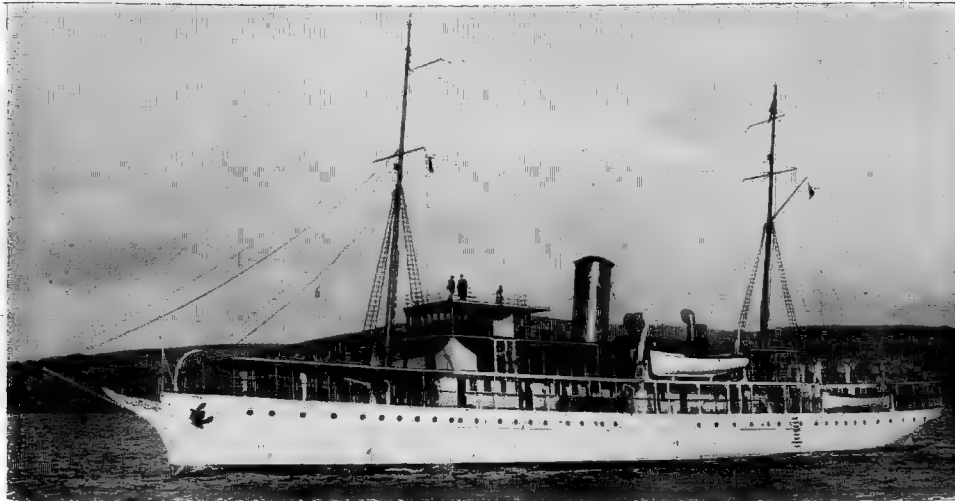


1925 Photo, Commander M. P. Cooper, R.I.M.

CORNWALLIS (ex *Lychnis*) Hamilton, August, 1917. Convoy Sloop of *Anchusa* series, 1290 tons. Dimensions : 255½ (p.p.), 266½ (w.l.), 277½ (o.a.) × 35 × 14½ feet. Guns : 3—4 inch, 2—2 pdr. pom-poms. Machinery : 4-cyl. triple expansion vertical. Boilers : 2 cylindrical. 1 screw. Designed H.P. 2500 = 15 kts. Coal : 260 tons. Complement, 140.

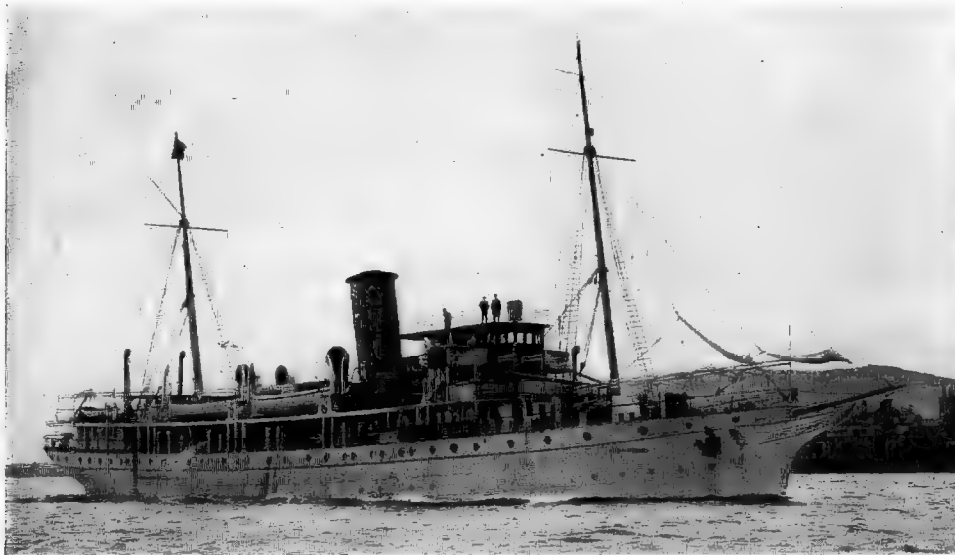
Note.—*Cornwallis* sold to Indian Government by the Admiralty, September 1921. Sister ship *Elphinstone* wrecked, Jan. 1925.

Minesweeping Sloops.



1920 Photo, by courtesy of the Director-General of Stores, India House.

LAWRENCE (ex-Despatch Vessel, launched by Messrs. Beardmore, July 30th, 1919, completed December 27th, 1919). 1412 tons (1225 tons standard). Dimensions: 225 (p.p.), 248½ (o.a.) × 34 × 8½ feet (light), 12 feet (max.) draught. Complement, 97. Guns: 2—4 inch, 1—2 pdr. pom-pom. All-geared turbines. 2 screws. 2 Babcock boilers. S.H.P. 1900 = 15 kts. Oil: normal, 144 tons; max., 153 tons. Designed by Sir Wm. Biles & Co.



1920 Photo, by courtesy of the Director-General of Stores, India House.

CLIVE (launched by Messrs. Beardmore, December 10th, 1919, completed April 20th, 1920). 2100 tons (2050 tons standard). Dimensions: 240 (p.p.), 270½ (o.a.) × 38½ × 10½ feet (light), 14 feet (max.) draught. Complement, 111. Guns: 2—4 inch, 2—2 pdr. pom-poms. All-geared turbines. 2 screws. 2 Babcock & Wilcox boilers. S.H.P. 1700 = 14½ kts. Oil: 179 tons normal, and 199 tons max. Designed by Sir Wm. Biles & Co.

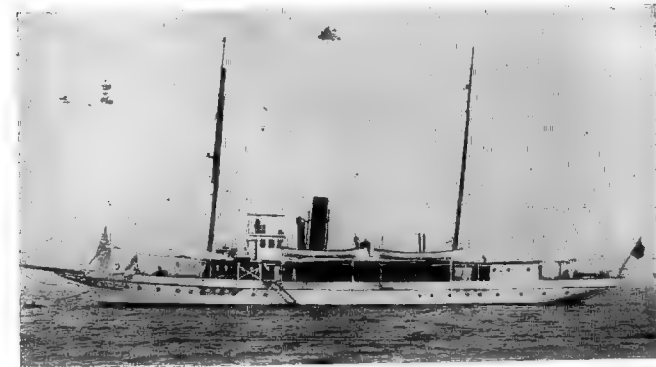
Surveying Ships.



1921 Photo, Mr. Pallett, Chief Writer, R.N.

INVESTIGATOR (Vickers, 1907). 1355 tons. (1172 tons standard). Dimensions: 204 × 33 × 13 feet. I.H.P. 1550 = 13 kts. 1 set triple expansion engines and 1 M-Return tube boiler. Coal: 172 tons. No guns. Complement, 110.

Note.—Length given above is between perpendiculars. Overall length is 232½ or with bowsprit, 241½ feet.



PALINURUS.

1921 Photo, Mr. Pallett, Chief Writer, R.N.

PALINURUS (Cammell Laird, 1907). 538 tons (444 tons standard). Dimensions: 140 × 24 × 10 feet (max. draught). 1 set triple expansion engines. 1 M-Return tube boiler. I.H.P. 475 = 11.25 kts. Coal: 64 tons. No guns. Complement, 45.

Patrol Boats.



1924 Photo, by courtesy of the Director, R.I.M.

PATHAN (ex P.C. 69). Workman, Clark. (1918). 832 tons (695 tons standard). Dimensions: $247\frac{1}{2} \times 26\frac{3}{4} \times 9$ feet. Turbines: S.H.P. 3,500=20 kts. Oil, 164 tons. Guns: 1—4 in., 2—12 pdrs.

BALUCHI (ex P.C. 55). Barclay, Curle. (1917). 755 tons (682 tons standard). Dimensions: $248\frac{1}{2} \times 25\frac{1}{2} \times 9\frac{1}{2}$ feet. Turbines: S.H.P. 3,500=20 kts. Oil, 134 tons. Guns: 1—4 in., 2—12 pdrs.

Depôt Ship.

DALHOUSIE (Greenock, 1886). 1960 tons. Dimensions: $239\frac{1}{2} \times 36 \times 15\frac{3}{8}$ feet. (Machinery removed.) Guns: 4—3 pdr., 1—2 pdr. pom-pom. Fitted out as Depôt Ship for the Royal Indian Navy, at Bombay.

Minesweeping Trawlers.

BOMBAY, CALCUTTA, KIDDERPORE, SEALDAH (1918-19). 588 tons, except *Bombay*, 590 tons. H.P. 480 = 10 kts. Guns: 1—12 pdr. *Bombay* oil fuel, others coal.

Trawler (used as Lighthouse Tender).

SALSETTE. Similar to *Bombay*. No armament at present.

NEWFOUNDLAND.

Transport.



Photo added 1929, by courtesy of Builders.

CARIBOU (Nieuwe Waterweg Scheepsbouw Maatschappij, Rotterdam, 1925). 2222 tons gross. Dimensions: $266 \times 41\frac{1}{4} \times 18\frac{1}{4}$ feet draught. Armament nil. I.H.P. 2800=14 kts. Machinery: Triple expansion. 1 screw. 2 S.E. boilers, working pressure 200 lbs. Coal: 411 tons. Complement, 51. Accommodation also provided for 243 passengers or troops. Strengthened for ice navigation.

14 Patrol Vessels, etc.

(Under control of Ministry of Finance and Customs.)

KYLE (Swan, Hunter, 1913). 1055 tons gross. Dimensions: $220 \times 32\frac{1}{4} \times 17\frac{3}{4}$ feet.

PORTIA, PROSPERO (1904). 978 tons gross. Dimensions: $204\frac{3}{4} \times 31\frac{1}{2} \times 16$ feet.

MEIGLE (ex-*Solway*, 1881). 836 tons gross. Dimensions: $220 \times 30 \times$ — feet.

SAGONA (1912). 808 tons gross. Dimensions: $175 \times 28\frac{1}{4} \times 13\frac{1}{2}$ feet.

GLENCOE (1899). 767 tons gross. Dimensions: $208 \times 30 \times 17$ feet.

ARGYLE, CLYDE, HOME (1900). 439 tons gross. Dimensions: $154\frac{1}{2} \times 25 \times 14$ feet.

MALAKOFF, SEBASTOL, SENEFF (1918). Ex-Trawlers of "Mersey" type. 321 tons gross.

PRIESTMAN (1910). Steam grab hopper. 291 tons gross.

DAISY (1912). 248 tons gross. (Displacement, 510 tons.)

Note.—Sloop *Lobelia* (replaced by *Caribou*), Patrol Vessels, *Watchful* and *Petrel* appear to have been disposed of.

DOMINION OF CANADA.

Chief of the Naval Staff under Minister of National Defence:
Commodore Walter Hose, C.B.E., R.C.N.

Personnel: R.C.N., Officers, 70; Men, 500. R.C.N.R., 70 and 430,
R.C.N.V.R., 70 and 830. Uniforms: As British Navy.

RECOGNITION SILHOUETTES.

Scale: 1 inch = 160 feet.

Government Vessels:—



ARLEUX class.

MALASPINA.

CARTIER.



ACADIA.

MONTCALEM.



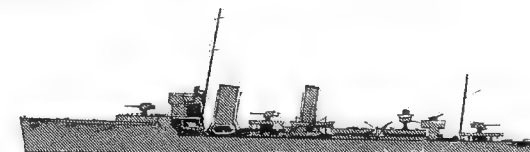
LADY GREY.

Royal Canadian Navy.



ARMENTIERES class (4)

DESTROYERS.



CHAMPLAIN, VANCOUVER.

2 Destroyers.

(For Pendant Numbers, vide British Navy Section under Destroyers.)

New Construction.

2 new destroyers, *SAGUENAY* and *SKEENA*, were ordered in Jan., 1929, from Messrs. Thornycroft, to replace those illustrated below. They will cost about £670,000, with armament. Displacement, 1320 tons. Dimensions: 310×29× feet. H.P. 34,000=35 kts. Machinery: Single reduction geared turbines.



CHAMPLAIN. 2 Thornycroft "S." *Champlain* (ex-Torbay), *Vancouver* (ex-Toreador), 1075 tons. Dimensions: 266½ (p.p.) 273½ (o.a.) × 27 ft. 5½ in. × 11 feet. Guns: 3—4 inch, 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. Torpedo tubes: 4—21 inch in two twin deck mountings. Machinery: Brown-Curtis turbines and 3 Yarrow boilers (built by Thornycroft). 2 screws. S.H.P. 29,000=36 kts. Oil: 306/248 tons. Complement 90. Transferred to Canada 1928, to replace worn-out *Patriot* and *Patrician*, and are employed for Training R.C.N.V.R. on Atlantic and Pacific Coasts respectively.

1928 Photo, C. Cozens.

	Began	Launched	Comp.	Trials
<i>Champlain</i> ...	11/17	6/3/19	17/7/19	36.4
<i>Vancouver</i> ...	11/17	7/12/18	4/19	

4 Minesweeping Trawlers.

(A = Atlantic, P = Pacific.)

(P) <i>Armentieres</i> ,	Steel. Built 1918.
(A) <i>Festubert</i> ,	357 tons gross, 136 tons net register. Dimensions: 130×25×14 feet.
(P) <i>Thiepval</i> ,	Guns: 1—12 pdr., Q.F. 12 cwt.
(A) <i>Ypres</i> ,	Speed: 10 kts. Complement, 18.

Note.—Four more Trawlers of this type, employed on Fishery Protection Duties, are listed with Canadian Government Vessels, below.

Depot Ships—(Nominal).

Stationed at Halifax.

Stadacona. Small motor launch. No guns.

Stationed at Esquimaux.

Naden (1913). Schooner with Auxiliary Motor. 118 tons. 80×20×9 feet. No guns.

B: CANADIAN GOVERNMENT VESSELS.

(From Official List. Arranged alphabetically. All speeds are maximum.)

Notes.

All Details of Canadian Government Vessels officially revised 1921, by courtesy of the Deputy Minister, Department of Marine and Fisheries, Ottawa.

Department of Marine and Fisheries.

With the exception of *Malaspina*, all guns dismantled and removed to store.

Services ships were engaged on, 1924, are abbreviated thus:—

- FP-A:—Fisheries Protection, Atlantic.
- FP-P:—Fisheries Protection, Pacific.
- HS-A:—Hydrographic Survey, Atlantic.
- HS-P:—Hydrographic Survey, Pacific.
- HS-GL:—Hydrographic Survey, Great Lakes.

ACADIA (1913). Steel 439 tons (net registered). Dimensions: 170×33.7×19.1 feet. H.P. 1200=12 kts. Guns: 1—4 inch Q.F., 2—12 pdr. Q.F. 12 cwt. Coal: 260 tons. Complement, 42. (HS-A.)

ARANMORE (1890). Iron. 502 tons (net registered). Dimensions: 241.5×34.8×15.7 feet. H.P. 1500=13 kts. Coal: 200 tons.

ARLEUX (FP-A), **ARRAS** (FP-P). Steel trawlers, both built 1918. 133 tons net. Dimensions: 130×25×13 feet. Guns: 1—12 pdr. Q.F. 12 cwt. Speed: 10 kts. Complement, 18.

BAYFIELD (1889). Steel. 114 tons net. Dimensions: 140×24×10.5 feet. Speed: 11 kts. Coal: 100 tons. Complement, 25. (HS-GL.)

BELLECHASSE (1912). 216 tons net. Dimensions: 142.2×27×12 feet. H.P. 1000=15 kts. Coal: 24 tons.

BRADBURY (1915). Steel. 500 tons. Dimensions: 151×27½×8 feet. Speed: kts. Complement, 13. (*Fisheries Patrol, Lake Winnipeg*).

CARTIER (1910). Steel. 234 tons net. Dimensions: 164×29×13 feet. Guns: 3—12 pdr. 12 cwt. Q.F. H.P. 830=12 kts. Coal: 150 tons. Complement, 34. (HS-A)

DOLLARD (1913). Steel. 323 tons (net registered). Dimensions: 178×31.9×15.3 feet. H.P. 1000=11 kts. Coal: 100 tons.

DRUID (1902). 193 tons net. Dimensions: 160×30×12.5 feet. H.P. 800=13 kts. Coal: 100 tons.

ESTEVAN (1912). 607 tons net. Dimensions: 212×38×15.3 feet. H.P. 1500=12½ kts. Coal: 350 tons.

FISPA (1913). 25 tons net. Dimensions: 82×14×5½ feet. Complement, 7.

**CANADA
UNION OF SOUTH AFRICA
NEW ZEALAND**

Government Vessels (continued)

Department of Marine and Fisheries (continued):—

- GIVENCHY (FP-P)**. Steel trawler, built 1918. 136 tons net. Dimensions: 130 × 25 × 14 feet. Guns: 1—12 pdr. Q.F. 12 cwt. Speed: 10 kts. Complement, 18.
- GRENVILLE (1915)**. 232 tons net. Dimensions: 155 × 30.9 × 10.9 feet. H.P. 900 = 11.5 kts. Coal: 100 tons.
- GULNARE (1893)**. Steel. 1 screw. 500 tons. Dimensions: 137 × 20.5 × 12 feet. Speed: 10 kts. Coal: 65 tons. Complement, 34. (*Tidal Survey—Atlantic.*)
- LADY GREY (1906)**. 439 tons net. Dimensions: 170 × 32 × 15.9 feet. H.P. 2300 = 14 kts. Coal: 200 tons.
- LADY LAURIER (1902)**. 1970 tons. Dimensions: 214.9 × 34.2 × 17.2 feet. H.P. 1800 = 13 kts. Coal: 175 tons.
- LAURENTIAN**. 155 tons net. Dimensions: 149 × 24 × 11 feet. H.P. 520 = 11 kts.
- LILLOOET (1908)**. Steel. 760 tons. Dimensions: 163 × 27 × 13 feet. H.P. 900 = 11½ kts. Coal: 140 tons. (HS-P.)
- LOOS (FP-A)**. Steel trawler, built 1918. 136 tons net. Dimensions: 130 × 25 × 14 feet. Guns: 1—12 pdr. Q.F. 12 cwt. Speed: 10 kts. Complement, 18.
- MALASPINA (1913)**. Steel. 1 screw. 850 tons. Dimensions: 160 × 26.5 × 14.5 feet. Guns: 1—6 pdr. Q.F. Hotchkiss. H.P. 1350 = 14½ kts. Coal: 200 tons. Complement, 40. (FP-P.)
- MARFISH (1912)**. 83.4 × 18.5 × 9 feet. Gross tonnage, 115.76. Registered tonnage, 78.72. N.H.P., 19.5. Complement, 7.
- MONTCALM (1904)**. Steel. 586 tons net. Dimensions: 245 × 40.6 × 15.7 feet. H.P. 3600 = 14 kts. Coal: 425 tons.
- NEWINGTON (1889)**. 76 tons net. Dimensions: 115.3 × 21 × 11.5 feet. H.P. 600 = 10 kts. Coal: 85 tons.
- RESTLESS (1906)**. Wood. 205 tons. Dimensions: 271 × 17 × 9 feet. Speed: 8½ kts. Complement, 8. (HS-P.)
- STANLEY (1888)**. 395 tons net. Dimensions: 207.8 × 32 × 17.9 feet. H.P. 300 = 15½ kts. Coal: 250 tons.

Department of Customs:—

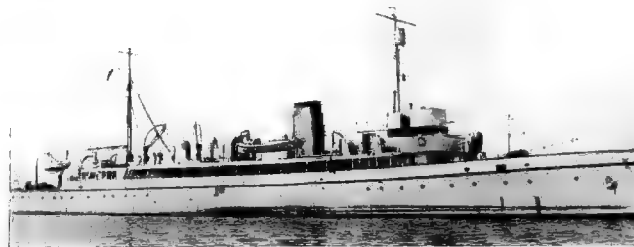
- MARGARET (Thornycroft, 1913)**. 950 tons. Guns: 2—6 pdr. Designed H.P. 2000=15½ kts. max. speed. Coal: 200 tons. Strengthened for ice navigation.

Note.—A new 17 kt. vessel of this type was ordered from Canadian Vickers Ltd., August, 1928.

UNION OF SOUTH AFRICA.

Officer Commanding South African Naval Service (under Department of Defence: Commander R. F. U. P. Fitzgerald, R.N.

Surveying Vessel.



1920 Photo, Abrahams, Devonport.

PROTEA (ex-Crozier), built by Messrs. Simons, Renfrew, Scotland. Launched July 1st, 1919; completed August 28th, 1919. Taken over from H.M. Navy, 1921. Converted Twin Screw Mine-Sweeper of "Later Hunt" type. Displacement: 800 tons. Dimensions: 231 (o.a.) × 28 ft. 7½ in. × 7½ feet. Guns: 1—3 pdr. Machinery (by Simons): Vertical triple expansion. Boilers: Yarrow. 2 screws. I.H.P. 2200 = 16 kts. Coal: 185 tons. Complement, 88.

Minesweeping Trawlers.

- | | |
|-----------------------------|---|
| Immortelle (ex-Eden) | } Both launched 1918. "Mersey type," taken over from H.M. Navy, 1921. |
| (ex-Thomas Johns) | |
| Sonneblom (ex Foyle) | |
| (ex-John Edmund) | 325 tons. gross. |
| | Dimensions: 138½ × 23½ × 12½ feet. |
| | Speed: 10.5 kts. |

Oceangoing Tugs.

- T. S. McEwen** (Bow, McLachlan & Co., Ltd., Paisley, 1925). 793 tons gross. Dimensions: 160 × 34½ × 15½ feet. H.P. 3400=15 kts. Watertube boilers. 2 screws.
- Sir David Hunter** (Ferguson Bros., Port Glasgow, 1915). 621 tons gross. Dimensions: 160 × 32 × 15 feet. H.P. 2300=13 kts. 2 screws.

(Some smaller Tugs also exist.)

**DOMINION OF
NEW ZEALAND.**

Naval Board.

President: The Minister of Defence.

First Naval Member: Commodore Geoffrey Blake, C.B., D.S.O., R.N.

Second Naval Member and Chief Staff Officer:* Captain J. S. G. Fraser, D.S.O., R.N.

Naval Secretary†: Paymaster Commander E. N. R. Fletcher, R.N.

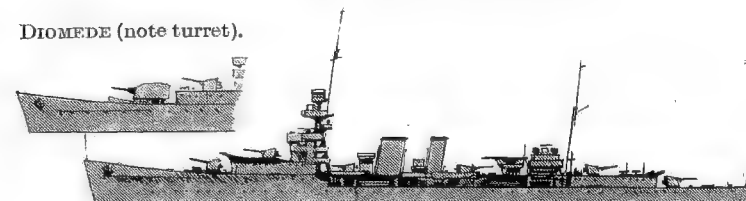
*Until such time as Commodore vacates command of H.M.S. *Dunedin* or other ship relieving her.

†Secretary to Commodore is also Secretary to Naval Board.

Future Programme.

It was officially announced in 1927 that in due course the *Dunedin* and *Diomedé* would be replaced by two cruisers of the York class (8400 tons). This will involve the increase of the annual maintenance charge from the present figure of £460,000 to about £600,000. Eventually, the sea-going squadron will include also a Submarine unit.

RECOGNITION SILHOUETTES.



DIOMEDE (note turret).

DUNEDIN.



NUQUIA.

CRUISERS, ETC.

Cruisers, etc.—NEW ZEALAND Oiler.



DIOMEDE. (Note forward gunhouse.) (Now has gaff on mainmast instead of foremast, and a 4" on blast screen aft.)

Photo added 1923.

DIOMEDE (29th April, 1919). **DUNEDIN** (19th Nov., 1918).

Displacement: 4765 and 4650 tons respectively. Complement: 450/469.

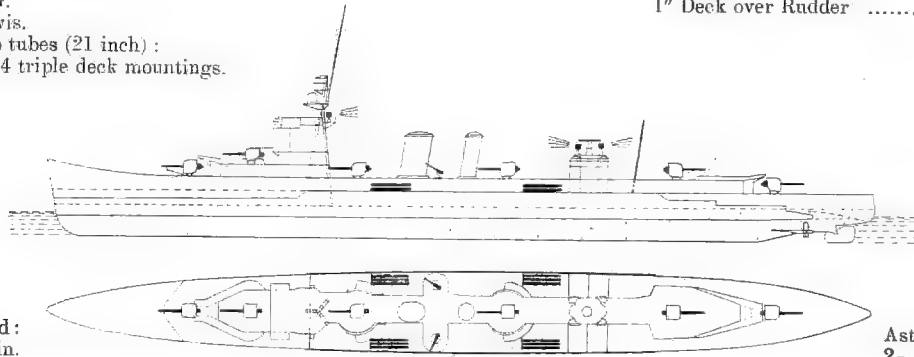
Dimensions: $472\frac{1}{2}$ (o.a.) $46\frac{1}{2} \times 14\frac{1}{4}$ feet (mean), $16\frac{1}{2}$ (max).

Guns:

- 6—6 inch, 50 cal. (**Dir.Con.**)
- 3—4 inch AA.
- 4—3 pdr.
- 2—2 pdr. pom-poms.
- 2 M.G.
- 8 Lewis.
- Torpedo tubes (21 inch):
- 12 in 4 triple deck mountings.

Armour:

- 1" Upper Deck (amidships) ...
- 3" Side (amidships)
- 2", $1\frac{3}{4}$ ", $1\frac{1}{2}$ " Side
- (bow and stern)
- 1" Deck over Rudder



Ahead:
2—6 in.

Astern:
2—6 in.

Machinery: *Diomedé* has Parsons and *Dunedin* Brown-Curtis geared turbines. Yarrow boilers in both. Designed S.H.P. 40,000 = 29 kts. *Trials*: 41,268 = 29.19. Oil fuel: *normal*, 300 tons; *max.*, 1060 tons. Begun under Emergency War Programme, *Diomedé* by Vickers, June, 1918, and *Dunedin* by Armstrongs, Nov., 1917, and completed 24th April, 1922, by Portsmouth D.Y., and Oct., 1919, respectively. Machinery by Vickers and Hawthorn, respectively. Transferred to New Zealand, 1924—25.



NUCULA.

1927 Photo, Nautical Photo Agency.

NUCULA (ex-*Soyo Maru*, ex-*Hermione*) (Armstrong, 1906).
4614 tons *gross*. Dimensions: $370 \times 48\frac{1}{2} \times 24\frac{1}{4}$ feet.
L.H.P. 2400 = 10.5 kts. Deadweight capacity: 6000 tons.



DUNEDIN.

1921 Photo, Seward.

Training Ship (ex-Cruiser).

PHILOMEL (Aug., 1890). 2575 tons. Complement, 222. Dimensions (o.a.): $278 \times 41 \times 16\frac{3}{4}$ (max.) feet. Armament: 1—6 inch, 1—4 inch, 2—12 pdr. Torpedo Tubes: Nil. Armour: $2\frac{1}{2}$ " Deck. Designed H.P. 7500 = 19 kts. (f.d.). Coal: 450 tons. Serves as Training and Depot Ship at Auckland.

Minesweeping Trawler.

WAKAKURA (ex-*T.R.1*). "Castle" type, similar to **ROBERT CLOUGHTON**, in British Navy section.

Fleet Tug.

TOIA (ex-*St. Boniface*, ex-*St. Fergus*). Details as "Saint" class, at end of British Navy Section.

Note.—Sloops **LABURNUM** and **VERONICA** are under control of New Zealand Naval Board while on this station.

(Kingdom under British Protection.)

**A:—Coastguard and Fisheries Administration.
Patrol Vessels.**

Photo wanted.

EL AMIRA FAWZIA (Swan, Hunter, July 8th, 1929). tons. Dimensions: $286 \times 38 \times$ feet. Machinery: Triple expansion. 2 screws. 2 S.E. boilers (working pressure, 180 lbs) Oil fuel.



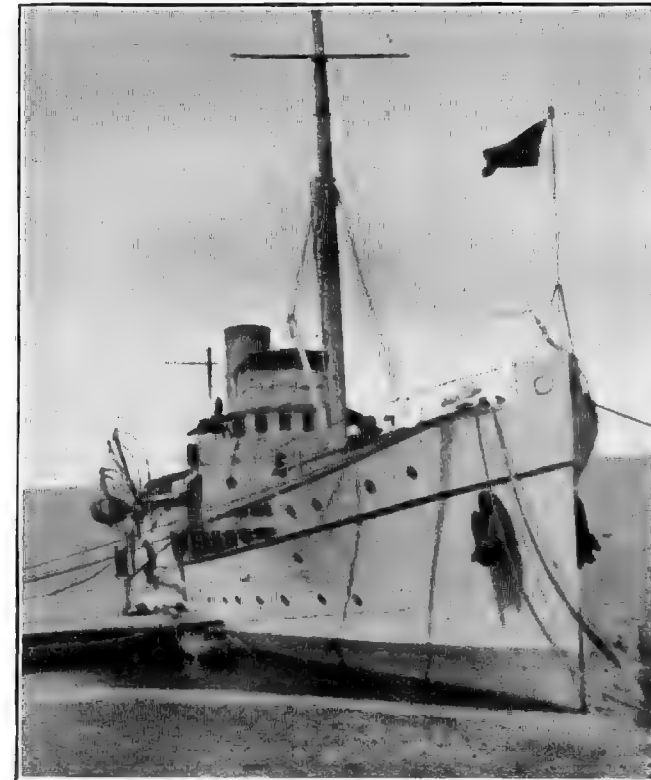
EL AMIR FAROUQ (Hawthorn Leslie, 1926). 947 tons *gross*. Dimensions: $247 \times 34 \times 12\frac{1}{2}$ feet draught. Guns: Not known. Machinery: Triple expansion. 2 screws. I.H.P. 2000 = 18 kts. Oil fuel.



RACHIB (*ex*-British "P" class Patrol Boat, 1917). Displacement, 613 tons. Dimensions: 230 (*p.p.*), $244\frac{1}{2}$ (*o.a.*) $\times 23\frac{1}{2} \times 7$ feet (*max.* draught. Guns: 1—12 pdr., 1 S.L. Parsons geared turbines. S.H.P. 3560 = 22 kts. Complement, 40.



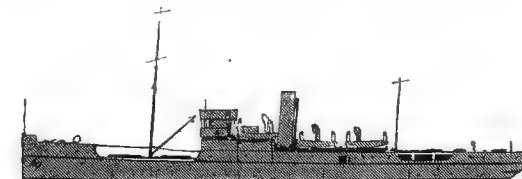
ABDUL MONEIM (Clydebank, 1902). 610 tons. Dimensions: 177 (*p.p.*) $\times 28 \times 12\frac{1}{2}$ feet *max.* draught. Guns: 2—3 pdr. 1 S.L. Machinery: Triple expansion. I.H.P. 850 = 13.5 kts. Complement, 44.

**B:—Ports and Lighthouses Administration.
Transport (*ex*-Sloop).**

SOLLUM.

1927 Photo, Lieut-Com. R. H. Mandley, R.N.

SOLLUM (*ex*-British Sloop *Syringa*, of *Anchusa* class, built by Workman, Clark & Co., 1917). Displacement, 1290 tons. Dimensions: $255\frac{1}{2}$ (*p.p.*), $262\frac{1}{2}$ (*o.a.*) $\times 35 \times 12$ feet. No guns. Designed H.P. 2500 = 16 kts. 1 screw. Coal: 260 tons. Many alterations have been effected at considerable cost to fit this vessel for accommodation of Government officials on visits of inspection, etc., to Mediterranean coast.

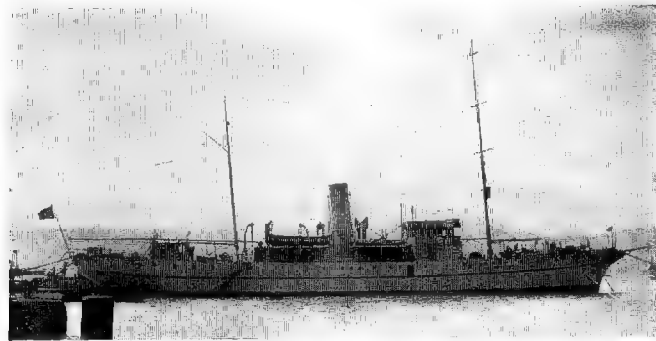


Inspection Vessels and Store Carriers.

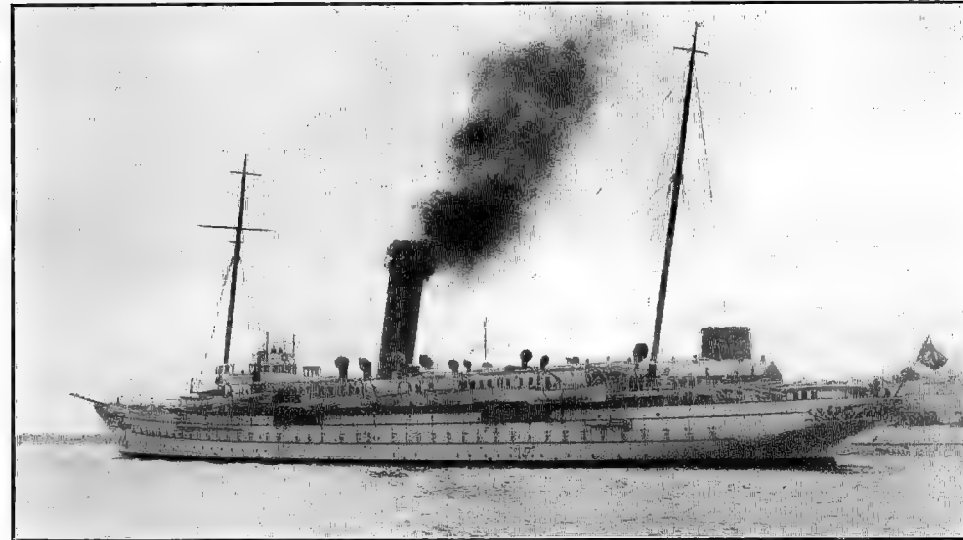
NAFTIS (1905). 325 tons *net*. Dimensions : $187\frac{3}{4}$ (*p.p.*) \times $30\frac{1}{2} \times 7\frac{1}{4}$ feet.

MONAGAM (1904). 87 tons *net*. Dimensions : 118 (*p.p.*) \times $19\frac{1}{4} \times 8\frac{3}{8}$ feet.

Note.—There are also a large number of Harbour Craft, Tugs, etc., for which space cannot be afforded.

Lighthouse Tender.

AIDA (A. & Ch. de la Loire, Nantes, 1911). 1428 tons *gross*. Dimensions : $246\frac{1}{2} \times 31\frac{1}{2} \times 13\frac{1}{2}$ feet draught. I.H.P. 1300 = 15 kts. 1 screw. Serves in Red Sea.

C:—Royal Yacht.

MAHROUSSA.

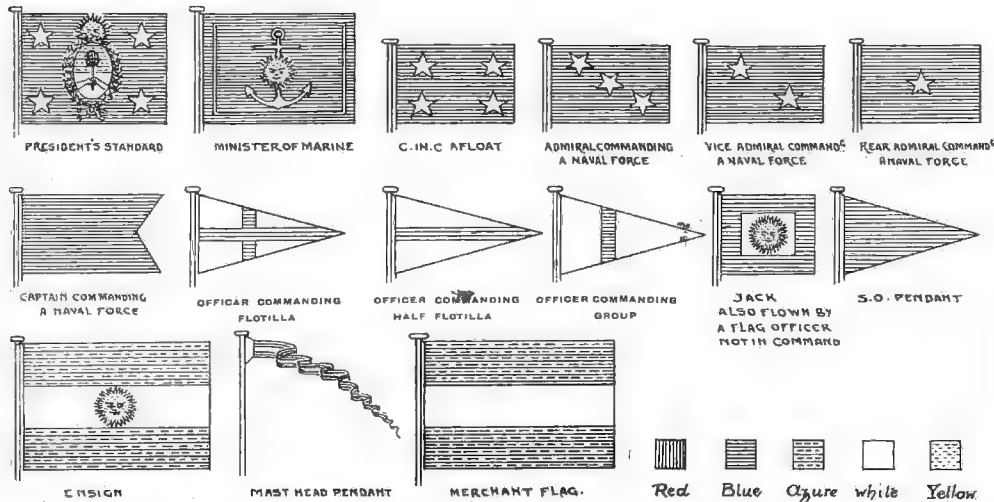
1927 Photo, Cribb.

MAHROUSSA. Iron. Built by Samuda Bros., Poplar, 1865. Reconstructed by A. & J. Inglis, Glasgow, 1905, and since re-fitted at Portsmouth Dockyard. Displacement : 4561 tons. Dimensions : 400 (*p.p.*), 420 (*w.l.*), $477\frac{5}{8}$ (*o.a.*) \times $42\frac{3}{4} \times 17\frac{1}{4}$ feet draught. Machinery : 3 Parsons turbines. Boilers (new 1905) : 5 main and 1 auxiliary Inglis multitubular. 3 screws. S.H.P. 5500 = 16 kts. Oil : 346 tons. Complement, 164.

ARGENTINE FLEET.

Revised by courtesy of Ministry of Marine, 1927.

Flags.



Nota-tion.	Nominal Calibre.		Maker.	Length in Calibres.	Muzzle Velocity.	Weight A.P. Projectile.	Max. penetration against K.C. with capped A.P. at	
	inches.	c/in.					5000 yards.	3000 yards.
HEAVY	12	30.5	B	50	2900	870	19	23
	10	25.4	A	40	2207	500	7	9½
MEDIUM	9.4	24	K	35	2300	352	4½	6
	8	20.3	A	45	2133	210	6½	9
	8	20.3	A	40	2680	210	3	5
	7.5	19	A	52	2550	200	...	...
LIGHT	6	15	B	50	3116	105	...	...
	6	15	A	45	2600	100	3	8½
	6	15	A	40	2500	100	3	4½
	4.7	12	A	45	2200	45	...	3¾
	4.7	12	A	40	2570	45	...	2¾
	4	10.16	B	50	2230	45	...	...
	4	10.16	B	50	2996	30	...	...

In the Maker's column A = Armstrong; B = Bethlehem; K = Krupp.
The above details of Argentine Naval Ordnance have been officially revised.

Insignia of Rank.
(As amended December 19th, 1923.)



Arsenals.

- (1) **BUENOS AIRES.** Dry docks: (Eastern) 590½ × 65½ × 25 feet, and (Western) 492 × 65½ × 25 feet. There is also a small private dock at San Fernando, 17 miles above the city.
- (2) **PUERTO BELGRANO** (Bahia Blanca). Dry docks: (1) 657 × 84 × 32½ ft., (2) 683 × 114 × 43 ft.
- (3) **RIO SANTIAGO.** Dock, 672 × 114 × 36 feet. Two floating docks: (1) 1500 tons lift; (2) 300 tons lift.

Mercantile Marine.

(From "Lloyd's Register," 1929 figures.)
Total gross tonnage, 296,236.

General Notes.

Personnel: about 9500 all ranks. Reserve: about 8000. Special reserve: 10,000.
Minister of Marine: Almirante Tomas Zurueta
Chief of Naval Staff: Contra Almirante Abel Renard.
Chief of Naval Commission (London): Contra Almirante Ismael F. Galindez.
Naval Attaché (London): Capitan de Fragata Guillermo Ceppi.

Scale : 1 inch = 160 feet.

RECOGNITION SILHOUETTES. (Revised 1919).

Silhouettes—ARGENTINA

ONE FUNNEL.



INDEPENDENCIA.



BAHIA BLANCA.
(Transport.)



ROSARIO.
PARANA.



PRESIDENTE SARMIENTO.
(Training Ship.)

TWO FUNNELS.



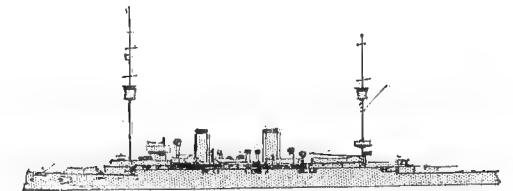
GENERAL SAN MARTIN.



GENERAL BELGRANO.



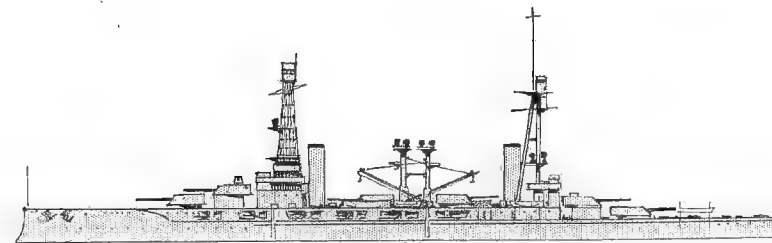
GARIBALDI.
PUYRRREDON.



BUENOS AIRES.



PATRIA.



MORENO.
RIVADAVIA.

TORPEDO CRAFT. (Scale: 1 inch = 160 feet.)



CORRIENTES.
ENTRE RIOS.
MISIONES.

} Yarrow
t.b.d.



CORDORA.
LA PLATA.

} t.b.d.



CATAMARCA.
JUJUY.

} t.b.d.

ARGENTINA—Battleships.

RIVADAVIA (26 Aug., 1911) & MORENO (23 Sept., 1911).

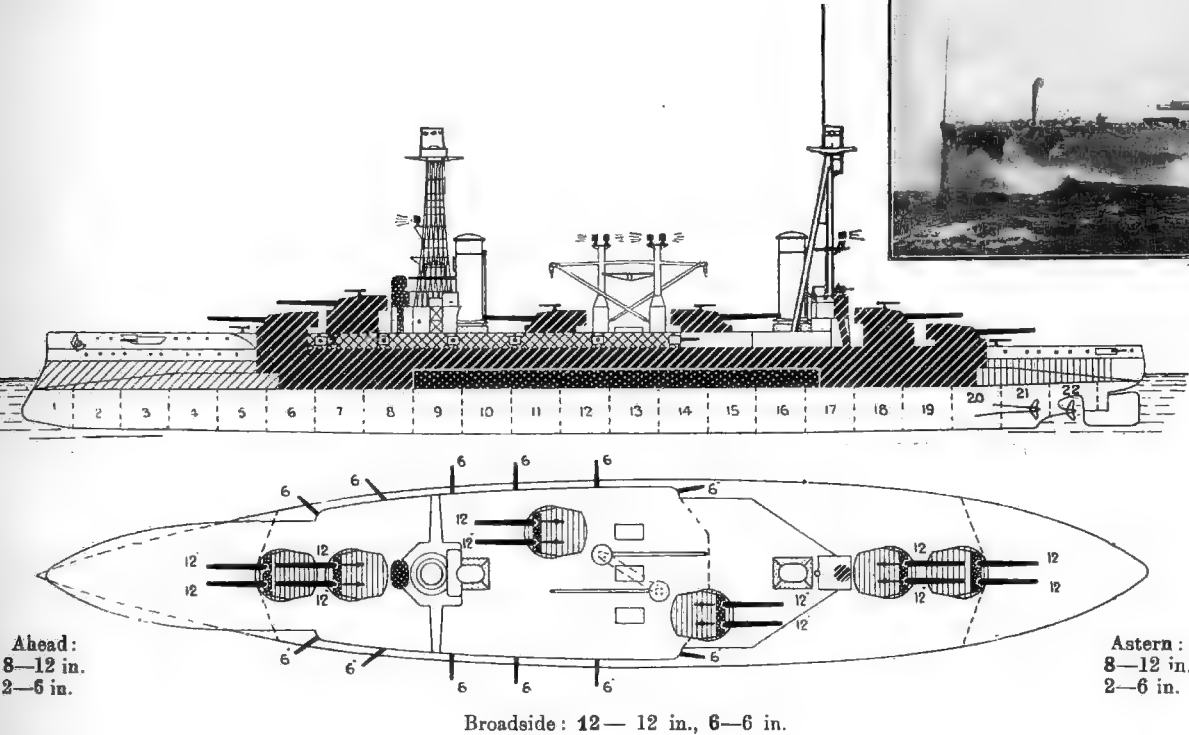
Normal displacement, 27,940 tons. Full load, 30,600 tons. Complement, 1215.

Length (w.l.), 577½ feet. Beam, 95 feet. Max. load draught, 28 feet. Length (over all), 585 feet.

- Guns (Bethlehem):
12—12 inch, 50 cal. } Dir.
12—6 inch, 50 cal. } Con.
4—3 inch AA.
4—3 pdr.
6 M.G.
(4 landing).
Torpedo tubes (21 inch):
2 submerged
(broadside).

- Armour (Krupp):
11"—8" Belt (amidships) {
5" Belt (bow) N.C.....
4" Belt (stern) N.C.....
3" Deck (slopes)
9"—8" Side above belt..
12"—9" Big gun turrets...
6" Secondary battery (N.C.)
12" Conning Tower (forward)
9" Do. (aft.)
Total weight: 7600 tons.

Machinery: Curtis geared turbines. 3 screws. H.P. 45,000 = 23 kts.
Boilers: 18 Babcock (converted to oil burning, 1924-25). Oil: 3,600 tons.
Nominal radius: 3930 miles at full speed, 8500 miles at 10 kts.



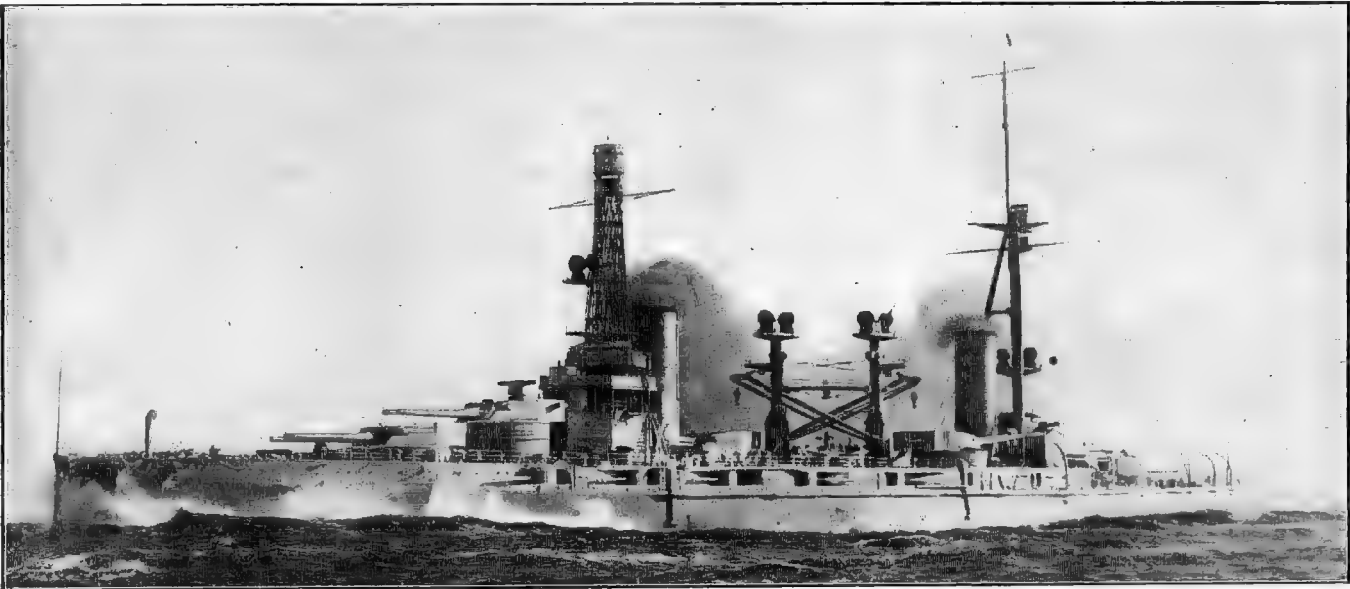
(1910) BATTLESHIPS.

New Construction.

The current Naval Programme, approved by Parliament in Sept., 1926, involves the expenditure of 75,000,000 gold pesos (£15,000,000) over the ten years 1927-1936. In addition to the extension of present dockyard facilities on the River Plate and at Puerto Belgrano, and the opening of a new yard at Mar del Plata, the construction of the following vessels to replace obsolete tonnage is provided for:—

- 3 Cruisers.
6 Flotilla Leaders.
6 Submarines.
1 Aircraft Tender.
2 Surveying Vessels.

These ships are to absorb over £5,000,000 of the sum voted.



1926 Photo, Fore River Yard (Builders).

Gunnery Notes.—Heights of barbettes over normal draught w.l.: No. 1, 29½ feet; No. 2, 37½ feet; Nos. 3 and 4 (echelon), and No. 5, 29 feet; No. 6, 20 feet; 6 inch guns, 19½ feet above w.l. Arcs of fire: end barbettes, Nos. 1 and 6, 270°; Nos. 2 and 5 (super-firing), 300°; Nos. 3 and 4 (echelon) 180° own beam and 100° far beam. R.F. on heads of derrick posts. Director controls (U.S.) type installed during 1924—25 refits. Rates of fire are reported to be: 12 inch, 2 rounds a minute; 6 inch, 8; 4 inch, 12.

Armour Notes.—Main belt is 8 feet deep, 4½ feet above water-line and 3½ feet below same at normal draught. It is 240 feet long, but 11" section is only 2 feet deep from top edge of belt, and then tapers to 5" on lower (under-water) edge. Belt under end barbettes is 10" tapering to 5" as main belt. Upper belt 400 feet long, 9" lower edge, 8" top edge, 6" battery above this. Funnel bases, 1½" nickel steel for 15 feet above deck. Protective decks, 1½" upper, 3" lower. Two Director stations behind upper belt at bases of C.T. communication tubes. Barbettes: bases are 9" where exposed. Shields to these: 12" port-plate, 9" sides, 11" back, 3" roof.

Anti-Torpedo Defence.—3" longitudinal wing bulkheads in way of machinery and magazine spaces. 4" nickel steel flats under magazines, boilers, and engine rooms. Total weight, 680 tons (included in 7,600 tons total weight of armour given above). 12—38-inch searchlights.

General Notes:—Built under 1908 Programme. Large refits in U.S.A., 1924—25.

Electric Engineering Notes.—Electric installation at 220 volts.

Name	Builder	Machinery	Laid down	Completed	Trials	Boilers	Best recent speed
Rivadavia Moreno	Fore River Co. N.Y. Ship- building	Fore River Co.	May, '10 July, '10	Dec., 1914 Mar. 1915	39,750 = 22½	Babcock Babcock	

ARMOURED CRUISERS.

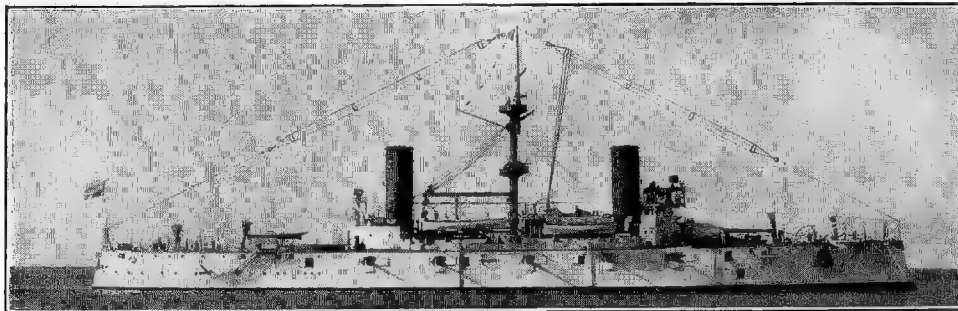
Armoured Cruisers—ARGENTINA



GEN. BELGRANO: Searchlight on mast on tower abaft 2nd funnel.

GEN. SAN MARTIN: This ship is almost of same appearance as Belgrano.

1918 Photo, by courtesy of the Ministry of Marine.

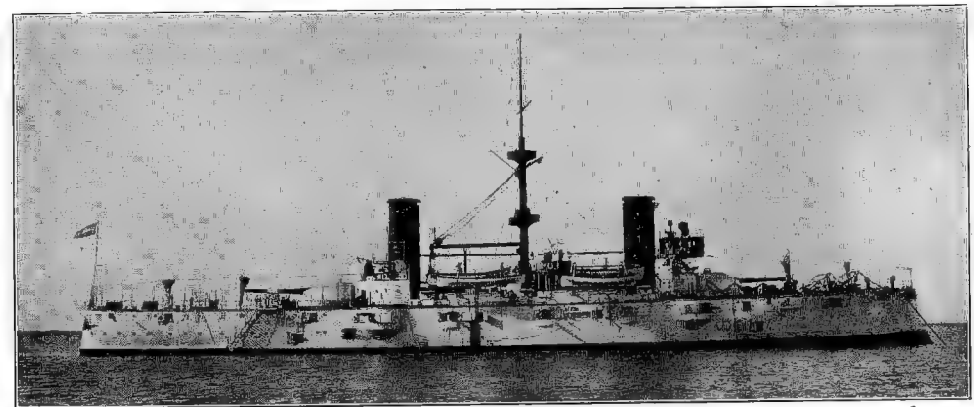


GARIBALDI.

1918 Photo, by courtesy of Ministry of Marine.

GENERAL BELGRANO (July, 1897). **GENERAL SAN MARTIN** (1896), both by Orlando, Leghorn. **GARIBALDI** (1895), by Ansaldo, Sestri Ponente. All 6840 tons. Length (o.a.), 328 ft. Beam, 59½ feet. Max. draught, 23½ feet. Complements, (G.B.) 425, (G.S.M.) 431, (G.) 414. Armament: *Belgrano* 2—10 inch, 14—6 inch, 4—12 pdr., 4—6 pdr. *San Martin*: 4—8 inch, 10—6 inch, 6—4·7 inch, 2—12 pdr., 6—6 pdr. *Garibaldi*: 2—10 inch, 10—6 inch, 6—4·7 inch, 2—12 pdr., 4—6 pdr. Armour: (Krupp in G.B., Harvey Nickel in G.S.M., Harvey in G.), 6" Belt with 3" at ends and 1½"—2" deck, 6" Lower deck side, 6" Battery, 6" Barbettes, 6" Bulkheads, 3" Gunhouses, 6" C.T. Machinery: 2 sets triple expansion. Boilers: 8 cylindrical, single-ended. H.P. 13000=20 kts. Coal: *normal*, about 400 tons; *maximum* (G.B.) 1150 tons, (G.S.M. & G.) 1137 tons. Endurance: about 5000 miles at 10 kts.

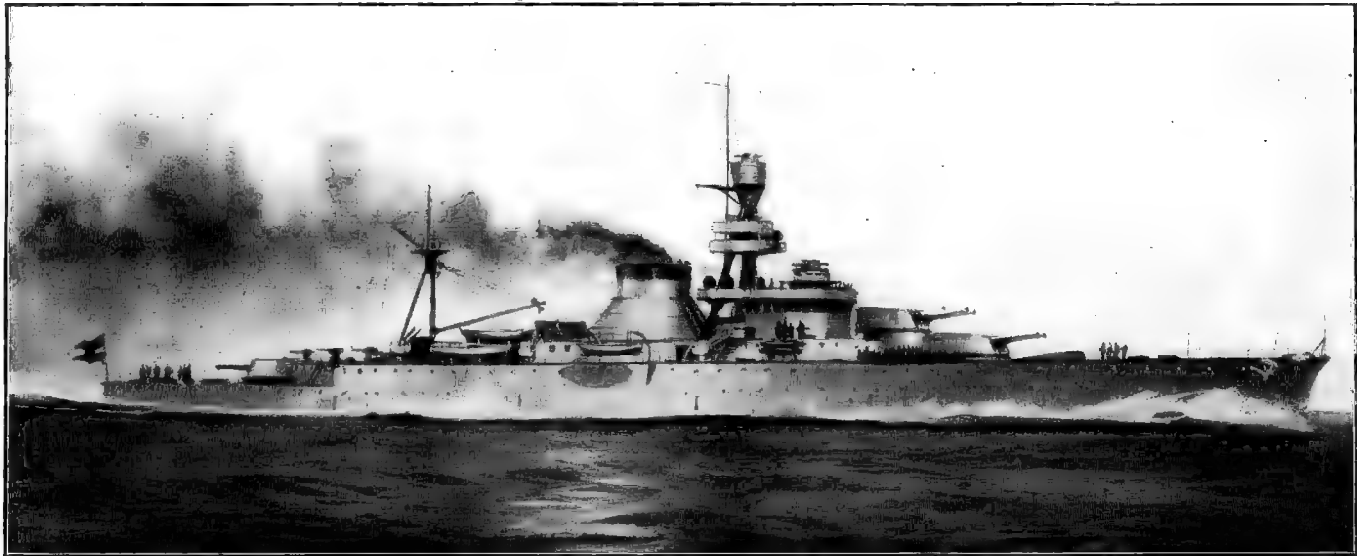
Special Note.—All 3 ships under refit and to be converted to burn oil.



Now has W/T. aerials from truck of mast to bow and stern, as *Garibaldi*.

PUEYRREDON (Ansaldo, 1897). *Normal* displacement, 6840 tons. Complement, 427. Guns (Armstrong): 2—10 inch, 40 cal. (A), 10—6 inch, 40 cal., 6—4·7 inch, 40 cal., 2—12 pdr., 4—6 pdr., Torpedo tubes (18 inch): removed. All other details as *General Belgrano*, except:—(a) Armour (Terni); (b) 16 Belleville boilers. (c) *maximum* coal capacity 1000 tons=4800 miles at 10 kts. Laid down 1896, completed 1901. Made 19·94 kts. on first trials. Machinery:—Ansaldo-Maudslay.

Note.—This ship is at present under refit, and will be converted to oil firing.

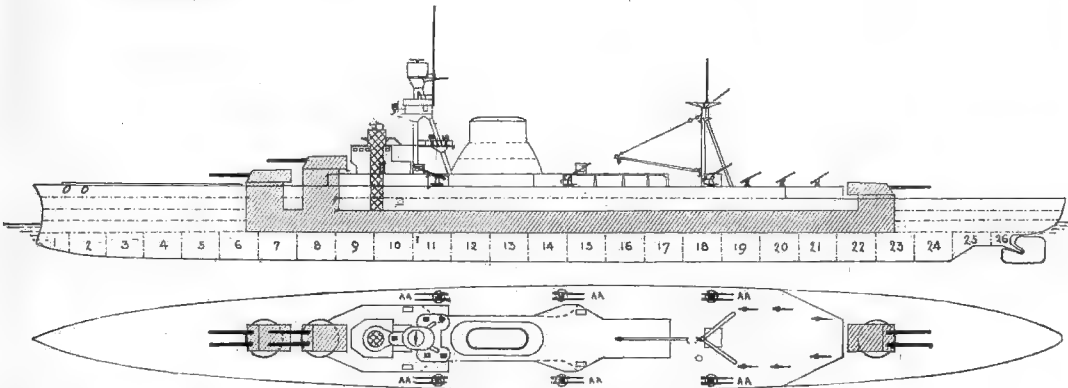


1027 Drawing by Oscar Parkes.

ALMIRANTE BROWN, VEINTECINCO DE MAYO (August 11th, 1929).
"Standard" displacement, 6800 tons. (Full load about 9000 tons.) Complement, 600.
Length, 543½ feet. Beam, 58 feet. Draught, 16½ feet.

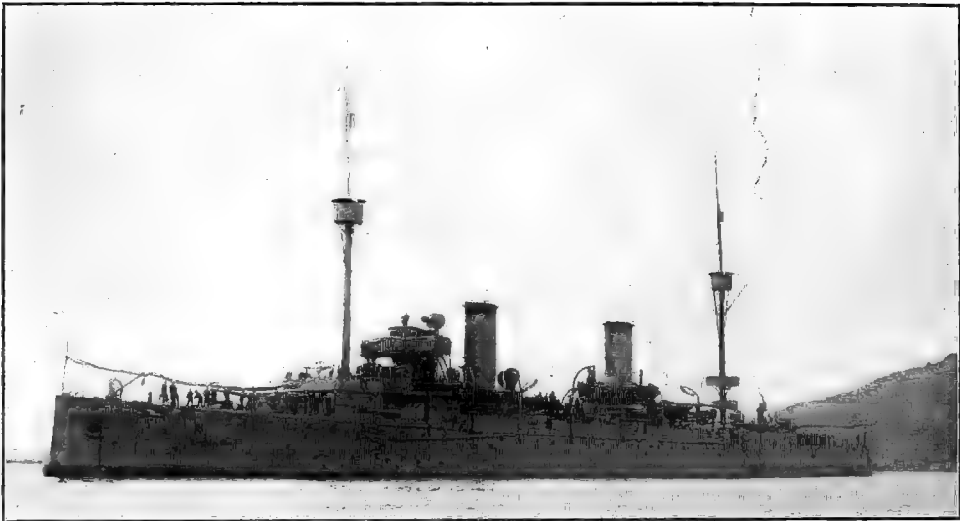
Guns :
6—7.5 inch.
12—3.9 inch, 47 cal. AA.
6—40 m/m. pom-poms.
Torpedo tubes (21 inch) :
6 above water (in triple mountings).

Armour :
" Deck
" Gun Houses
" C.T.



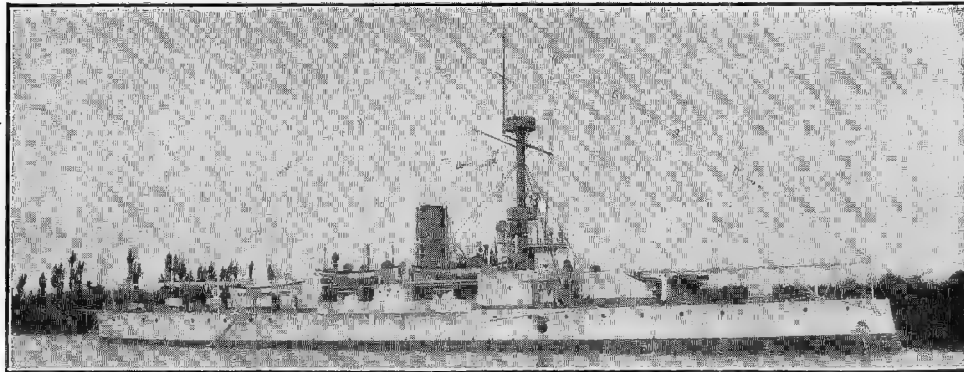
Machinery : Geared turbines. S.H.P. 85,000 = 32 kts. Oil fuel : 2000 tons.

General Notes.—Both laid down 1927, *25 de Mayo* by Orlando at Leghorn, *Alm. Brown* by Odero at Sestri Ponente. To cost £1,225,000 each. A third Cruiser of this type is projected.
Gunnery Notes—AA. guns are in twin mountings similar to those in Italian *Trento* type.



Note altered bridge and new control tops. 1926 Photo, T. de N. Mateo Mille, R.S.N.
BUENOS AIRES (Armstrong, 1895). Displacement 4780 tons. Sheathed and coppered. Complement 375. Length (o.a.), 403½ feet. Beam, 47½ feet. Maximum draught, 19 feet. Guns (Armstrong) : 6—6 inch, 45 cal., 6—4.7 inch, 45 cal., 12—3 pdr. Torpedo tubes : removed. Armour (steel) : 5" Deck (amidships), 5" Engine hatches, 4½" Gun shields, 3" Hoists to guns, 6" Conning tower (Harvey). Machinery : 2 sets vertical 4-cylinder (2 low-pressure cylinders). 2 screws. Boilers : 4 double-ended and 4 single-ended. Designed H.P. 13,000=23 kts.; 17,000=24 kts. Coal : normal 400 tons ; maximum 1000 tons. Endurance : 5000 miles at 10 kts.

Coast Defence Battleships.

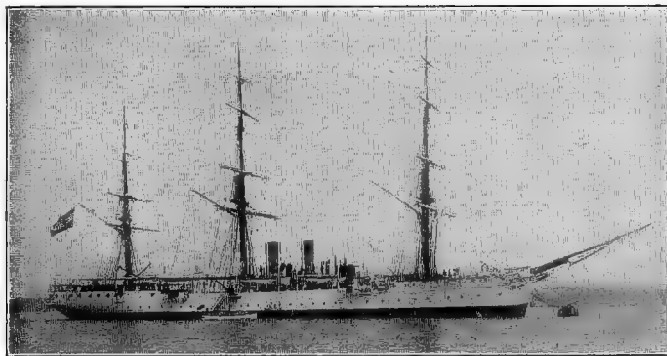


INDEPENDENCIA.

1918 Photo, by courtesy of the Ministry of Marine.

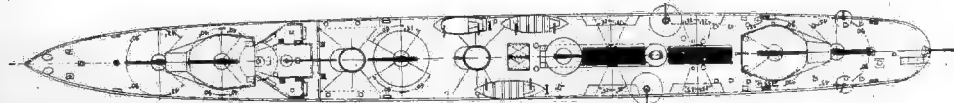
INDEPENDENCIA (1891), **LIBERTAD** (ex-*Nueve de Julio*, 1890). Both built by Laird's, Birkenhead. Displacement, 2300 tons. Complement, 196. Length (*p.p.*), 240 feet. Beam, 43 feet. *Max.* draught, 13 feet. Guns: 2—9.4 inch, 35 cal. (Krupp), 4—4.7 inch, 40 cal. (Armstrong), 6—3 pdr. Armour (compound): 8" Belt (amidships), 2" Deck (flat on belt), 8" Bulkhead (forward), 6" Bulkhead (aft), 8" Barbettes and bases, 5" Shields to big guns (fronts), 4" Conning tower. Machinery: Compound vertical. 2 screws. Boilers: 4 double cylindrical. Designed H.P. 3000 = 14 kts. Oil fuel: tons. (Converted to burn oil, 1925-27, *Libertad* being re-instated from Non-effective List for that purpose.)

Training Ship.



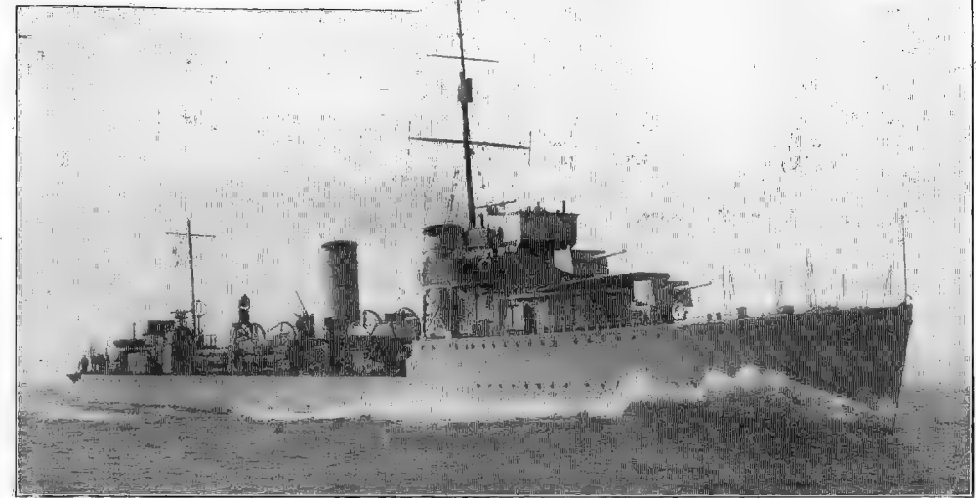
PRESIDENTE SARMIENTO (1898). Built at Birkenhead. 2850 tons. Complement 294. Dimensions: $251\frac{1}{2} \times 43\frac{1}{4} \times 22\frac{1}{4}$. Guns: 3—4.7 inch, 45 cal.; 1—4 inch, 2—6 pdr., 2—3 pdr. Torpedo tubes: 3 above water. Designed H.P. 2800=15 kts. Coal: 330 tons. Boilers: 1 Niclausse, 1 Yarrow, 2 cylindrical single-ended.

Notes.—Sheathed and coppered. Has accommodation for 400 boys. Refitted by builders, 1926.



JUAN DE GARAY plan.

5 + 1 (projected) Flotilla Leaders.



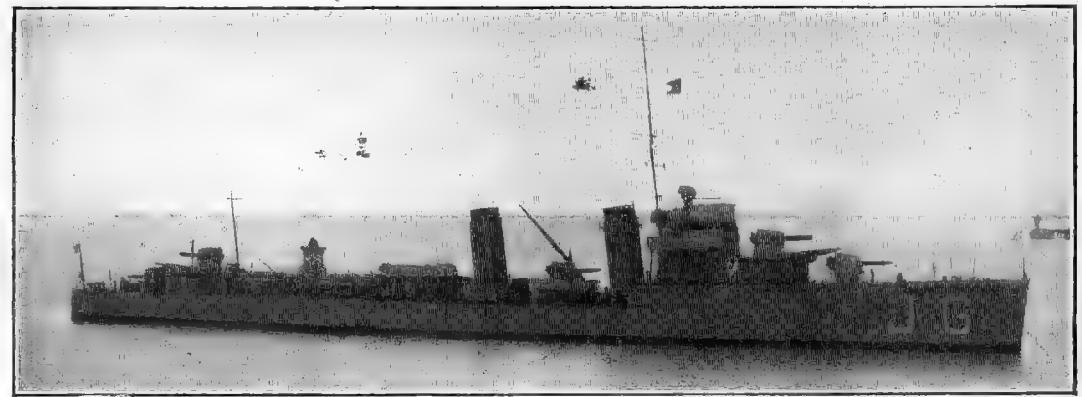
MENDOZA.

1929 Photo, by courtesy of Builders.



Plan by courtesy of Messrs. J. Samuel White & Co., Ltd.

3 White: **Mendoza** (July 18th, 1928), **Tucuman** (Oct. 16th, 1928) and **La Rioja** (Jan. 26th, 1929). All laid down in June, 1927 for completion in June, 1929. Displacement, (*normal*) 1520 tons; (*full load*) about 1800 tons. Complement, 160. Dimensions: $332\frac{1}{2}$ (*w.l.*), 335 (*a.a.*) $\times 31\frac{1}{2} \times 11$ feet. Guns (Vickers-Armstrong): 5—4.7 inch, 1—3 inch AA, 2 pom-pom. Torpedo tubes: 6—21 inch, in triple deck mountings. 2 sets Parsons turbines, with single reduction gearing. Steam supplied at 250 lbs. from 4—3 drum water-tube boilers. Designed speed 36 kts. 38 kts. maintained for 6 hours on trials by *Mendoza* and *Tucuman*; *La Rioja* touched 39.4 kts. No further particulars available, but will be of the same general type as *Cervantes* class, described below.



JUAN DE GARAY.

1928 Photo, Capt. Don Mateo Mille, R. Sp. N.

Cervantes (ex *Charruca*, Cadiz, June 26th, 1925), **Juan de Garay** (ex-*Alcala* (*Juliano*, Cartagena, Nov. 3rd, 1925). Purchased from Spanish Government, 1927. Displacement, 1650 tons *normal* (1800 tons *full load*). Dimensions: $320 \times 31\frac{1}{2} \times 10\frac{1}{2}$ feet. Guns: 5—4.7 inch, 1—14 pdr. AA. Torpedo tubes: 6—21 inch, in triple deck mountings. 2 D.C. carried. Machinery: 2 sets Parsons geared turbines. S.H.P. 42,000 = 36 kts. Oil fuel: 540 tons. Radius of action: 4500 miles at 14 kts.

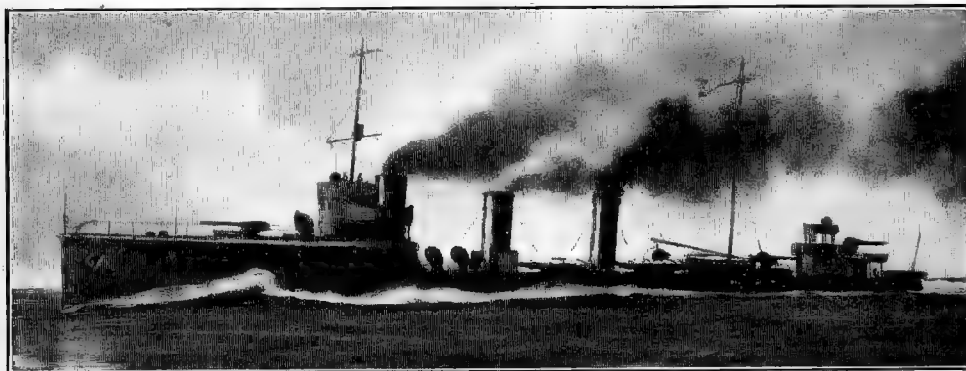
Note.—Design generally resembles that of British *Scott* class. The acquisition of a third vessel of this type is understood to have been authorised, to complete programme.

(For plan see preceding column.)

7 Destroyers.

No.	Type	Date	Dis- place- ment tons	H.P.	Max. speed kts.	Fuel	Com- ple- ment	T. tubes	Max. draught feet
2	<i>Cordoba</i> (S)	'10-'12	950	20,000	32	200 tons oil	99	4	8
2	<i>Catamarca</i> (K)	'10-'12	950	20,000	32	220 tons oil	99	4	8½
3	<i>Corrientes</i> (Y)	'96-'98	340	4000	26	80 coal	66	3	8½

K=Krupp. S=Schichau. Y=Yarrow.



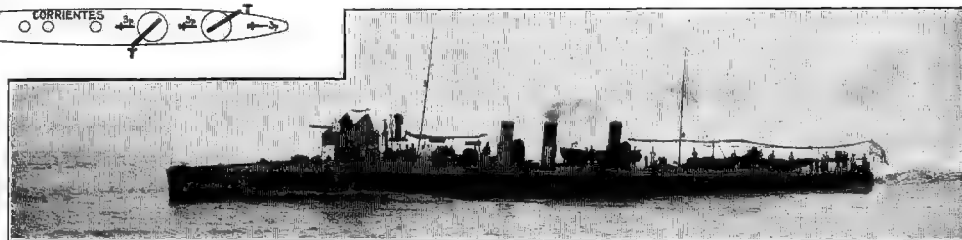
CATAMARCA, as altered.

1928 Drawing, Oscar Parkes.

2 (German) type: **Cordoba** (Schichau, Nov. 1910), **La Plata** (Germania, Jan., 1911). 950 tons. 295 × 29½ × 7½ feet. Armament: 2-4 in. (Beth.), 1-3 inch AA. 4-21 inch tubes. 1 D.C. Thrower. Curtis (A.E.G.) turbines. Boilers: 5 Schulz-Thornycroft, altered to burn oil. Designed S.H.P. 20,000=32 kts. Oil: 200 tons. Endurance: 2700 miles at 15 kts., 715 miles at full speed. Trials (max.): *Cordoba*, 34½; *La Plata*, 34½.

2 (German) type: **Catamarca** (Schichau, Jan., 1911), **Jujuy** (Germania, March, 1911). 950 tons. 288½ × 7½ × 28 feet. Armament: 2-4 inch (Beth.), 1-3 inch AA. 4-21 inch tubes. 1 D.C. Thrower. Curtis (A.E.G.) turbines. Boilers: Schulz-Thornycroft, altered to burn oil. Designed S.H.P. 20,000=32 kts. Oil: 220 tons. Endurance: 3000 miles at 15 kts., 800 miles at full speed.

Appearance Note.—*Cordoba* and *La Plata* have ram bow.



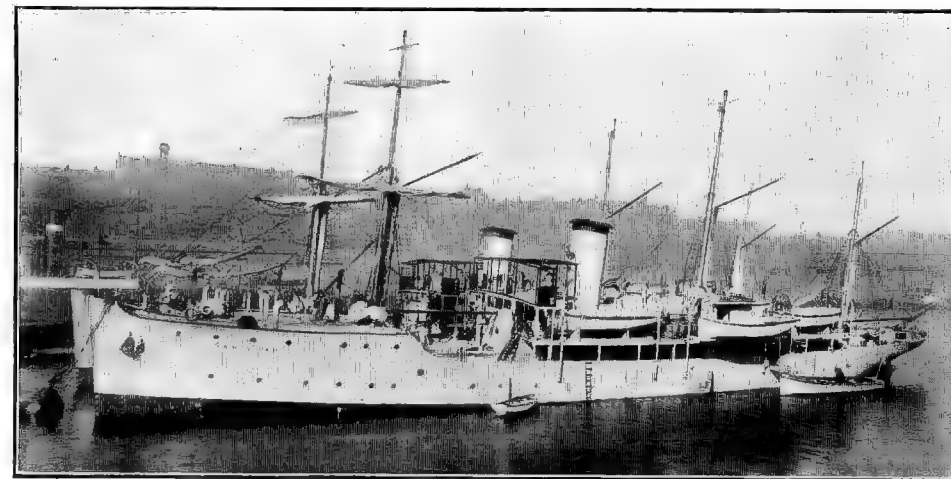
3 Yarrow type: **Corrientes**, **Entre Rios**, **Misiones** (—1896). Dimensions: 190 × 19½ × 8½ feet. 1" armour protection amidships. Armament: 1-14 pdr., 3-6 pdr., 2-1 pdr., 3 tubes (18 inch). 6 Yarrow boilers. Coal: 80 tons. Endurance: 900 miles at 15 kts. Other details as table. These 3 boats are officially described as "obsolete."

3 Submarines.

Building.

3 Cavallini type; **Salta**, **Santa Fé**, **Santiago del Estero**. Ordered from Cantiere Navale Franco Tosi, Taranto, Oct., 1927. Displacement 37½ tons. H.P. 3000=17.5 kts., on surface. Submerged speed 9 kts. Armament: 1-4 inch gun, 6-21 inch tubes. To cost £206,000 each, fully equipped. General design resembles Italian *Mamel* type.

3 Surveying Vessels.



1928 Photo, by courtesy of Messrs. R. & W. Hawthorn, Leslie & Co., Ltd.

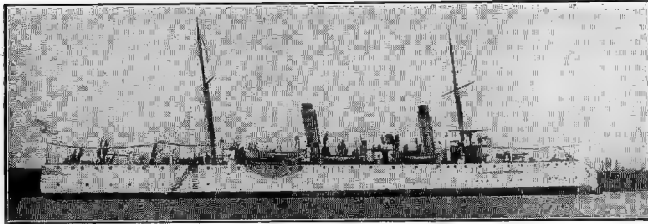
SAN JUAN (Sept. 27th, 1927). **SAN LUIS** (Oct. 26th, 1927). Both built by Hawthorn, Leslie & Co., Ltd., Hebburn-on-Tyne. Delivered Feb. 1928. Displacement, 970 tons. Dimensions: 207 (o.a.) × 33 × 11 feet draught. Complement, 92. Guns: Nil. Machinery: Single shaft Hawthorn-Werkspeer Diesel engine. B.H.P. 700 = 12 kts. 1 screw. 1 single ended Scotch boiler to supply steam to auxiliary machinery. Oil fuel 85 tons. Radius of action: 4000 nautical miles.

ALFEREZ MACKINLAY (Netherlands, 1914). 783 tons. Dimensions: 193½ × 28½ × 13 feet. Guns: Nil. H.P. 520 = 10 kts. Used as Lighthouse Inspection Vessel.

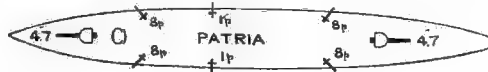
MISCELLANEOUS.

Miscellaneous—ARGENTINA

Gunboat.



PATRIA (Birkenhead, 1893). Displacement, 1070 tons. Dimensions: $251\frac{1}{2} \times 30\frac{3}{4} \times 11\frac{1}{2}$ feet. Complement, 156. Guns: 2—4.7 inch, 40 cal., 4—6 pdr., 2—3 pdr. Machinery: 2 sets triple expansion. 2 screws. Boilers: 4 double-ended Yarrow. Designed H.P. 4500=20.5 kts. Coal: 260 tons. Endurance: 3200 miles at 10 kts.



Despatch Vessels. (Avisos).*

A1, A2, A3, A4, A5, A6, A7, A8, A9, A10 (Germany, 1916-19). These are ex-German Minesweepers of the "M" type, purchased by the Argentine Government in 1922 for use as Despatch Vessels. Displacements vary from 479 to 508 tons. Dimensions: 182 (*w.l.*), 192 (*a.a.*) \times $23\frac{1}{2} \times 7\frac{1}{2}$ feet (*max.*). Engines: 2 sets vertical triple expansion. Boilers: 2 Schulz water-tube. I.H.P. 1800=16 kts. Coal: 550 tons.

GAVIOTA. (Howaldt, 1888). 120 tons. Dimensions: $98\frac{1}{2} \times 17\frac{1}{2} \times 8$ feet. H.P. 230 = 8 kts. Guns: *Nil*.

USHUAIA (ex-Bahia Blanca, 1888) built by Howaldt, Kiel. 95 tons. Dimensions: $98\frac{1}{2} \times 17\frac{1}{2} \times 10\frac{1}{2}$ feet. H.P. 170 = 8 kts. Guns: *Nil*.

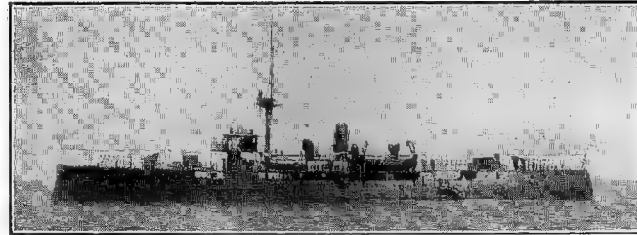
RESGUARDO (1874), **VIGILANTE** (1874). 100 tons. Dimensions: $98\frac{1}{2} \times 18 \times 3\frac{1}{2}$ feet. Guns: *Unknown*. H.P. 168 = 8 kts. Coal: *about* 17 tons.

* All except A class are deemed obsolete.

River Police Craft. (Policia fluvial).

SAYHUEQUE (1901), built by Rennie Forrest. 145 tons. Dimensions: $125 \times 25 \times 2\frac{3}{4}$ feet. H.P. 185 = 9 kts.

Armoured River Gunboats.



Official Photo, 1918.

PARANA (April, 1908) & **ROSARIO** (July, 1908). Both built by Armstrong. Displacement, 1055 tons. Complement, 142. Length, 329 $\frac{3}{4}$ feet. Beam, 32 $\frac{3}{4}$ feet. Draught, $7\frac{5}{8}$ feet. Guns: 2—6 inch Howitzers, 6—12 pdr., 8 Machine, 2 landing. Armour: 3" Belt (amidships), $1\frac{1}{2}$ "—1" Deck, 3" Conning tower. H.P. 1600=15 kts. 2 Yarrow boilers. 2 screws. Coal: 120 tons. Nominal radius, 2400 miles at 10 $\frac{1}{2}$ kts.



Note.—These two vessels are remarkable in that their main armament consists of howitzers, 13 calibres in length.

Minelayer (Minador).

FULTON (Birkenhead, 1897). 79 tons. Dimensions: $79 \times 15 \times 6$ feet. H.P. 100 = 9 kts. Guns (if any) and number of mines carried: *Not known*.

Oil Tanker (rated as Transport).

MINISTRO EZCURRA (Grangemouth Dockyard Co., Grangemouth, 1914). 2600 tons. Dimensions: $250 \times 40 \times 18\frac{1}{2}$ feet. H.P. 1243 = 10 $\frac{1}{2}$ kts.

Transports (Transportes).

(Tonnage given is gross in each case.)

CHACO (ex-Rio Claro, 1923), **PAMPA** (ex-Rio Bueno, 1923) (both built by Danziger Werft, Danzig). 1100 tons. Dimensions: $273 \times 37 \times 24$ feet. H.P. 1500 = 11 kts.

AMERICA (ex-Lake Hector, 1920). 2686 tons. Dimensions: $262 \times 43\frac{1}{2} \times 24$ feet. H.P. 1520 = 9.5 kts.

Transports—continued.

BAHIA BLANCA (Reiherstieg, Hamburg, 1911, taken over during War, 1914-18). 9349 tons. Dimensions: $489 \times 59 \times 27\frac{1}{2}$ feet. H.P. 4200 = 12.5 kts.

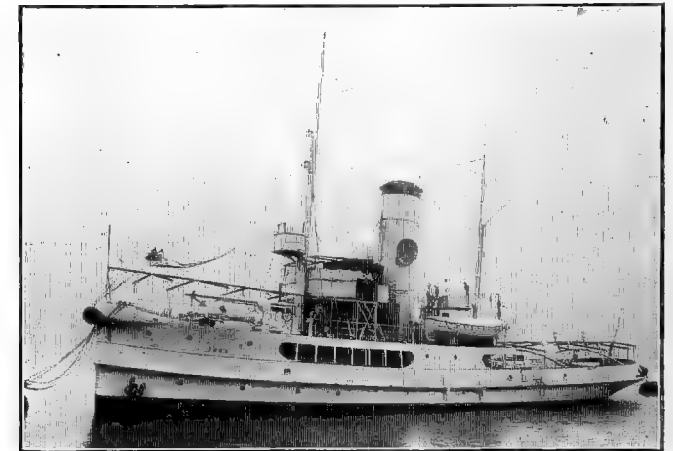
VICENTE FIDEL LOPEZ (Earles, 1906). 507 tons. Dimensions: $164 \times 26 \times 11\frac{1}{2}$ feet. H.P. 480 = 9.3 kts.

GUARDIA NACIONAL (Barclay, Curle, 1890). 3079 tons. Dimensions: $365 \times 41\frac{3}{4} \times 23$ feet. H.P. 1850 = 14 kts.

PRIMERO DE MAYO (Howaldt, 1893). 925 tons. Dimensions: $197 \times 29\frac{1}{2} \times 14$ feet. H.P. 650 = 11 kts.

RIO NEGRO (1860, rebuilt 1920). 2478 tons. Dimensions: $325 \times 36 \times 19\frac{3}{4}$ feet. H.P. 2250 = 11 kts. Coal: 720 tons. Endurance: 5900 miles.

Tugs (Remolcadores).



TOBA.

1928 Photo, by courtesy of Builders.

MATACO (Jan. 24th, 1928), **TOBA** (Dec. 23rd, 1927). Both built by Hawthorn Leslie. (Completed March, 1928). 339 tons *gross*. Dimensions: $130\frac{1}{2}$ (*p.p.*), 137 (*w.l.*) \times $28\frac{1}{2} \times 13\frac{1}{2}$ feet. H.P. 1100 = 12 kts. 2 screws. Oil fuel.

AZOPARDO (ex-Barstow, Bethlehem Co., 1919). 437 tons *gross*. Dimensions: $164 \times 27\frac{1}{2} \times 14$ feet. H.P. 1800 = 14 kts.

ONA, QUERANDI (Thornycroft, 1913). 345 tons *gross*. Dimensions: $130 \times 28 \times 12$ feet. H.P. 1200 = 12 kts.

AUSTRIA BELGIUM

AUSTRIA.

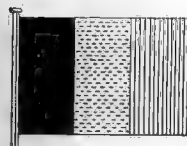
Note.—The 4 river patrol vessels which constituted the Austrian Navy have all been sold, and this section therefore disappears.

BELGIUM.

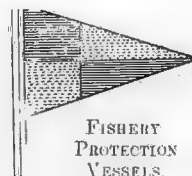
Officially revised, 1927, by courtesy of the Directeur-General, Administration de la Marine.

SPECIAL NOTE.—The former Belgian Navy has been suppressed as a measure of economy, the sloop **ZINNIA** alone being retained for Fishery Protection.

Flags.



Black
Yellow
Red



OTHER
STATE-OWNED
SHIPS.

The National Flag is also used as Ensign for both State and Mercantile vessels.

Uniforms.



Commandant.

Lieutenant.
de 1^{re} Classe. de 2^e Classe.

The gold stripes on sleeves are 6 m/m. wide for Commandant and Premiere Lieut., and 8 m/m. wide for 2^e Lieut.

Mercantile Marine.

(Official Government Figures, 1929). Total gross tonnage, 529,043.

Belgium—continued.

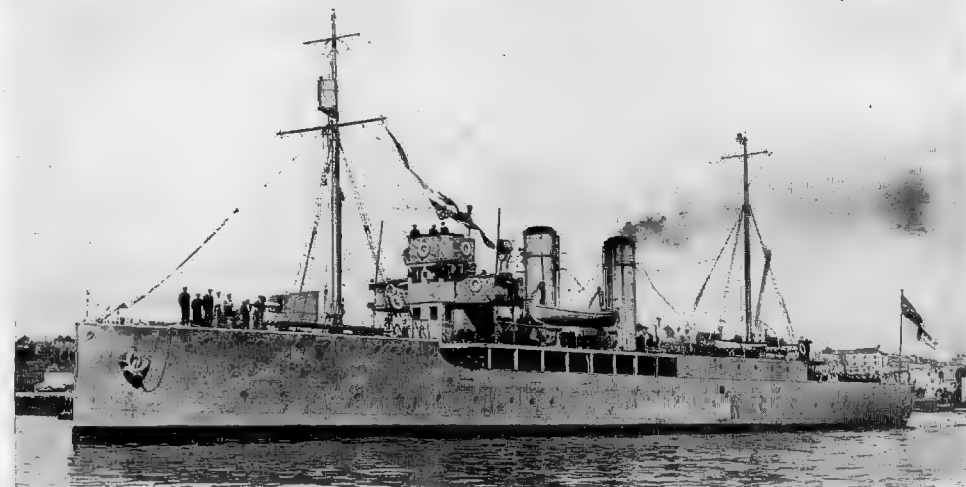
RECOGNITION SILHOUETTES.

Scale: 1 inch = 160 feet.



ZINNIA.
(Fisheries Protection Vessel.)

Sloop (Aviso).



ZINNIA.

1920 Photo, Abrahams, Devonport.

ZINNIA (ex-British "Flower" class Sloop *Zinnia*, launched August, 1915, by Messrs. Swan, Hunter & Wigham Richardson, Wallsend. Purchased for Belgian Navy, June, 1920). 1200 tons. Dimensions: 250 (p.p.), 262½ (o.a.) × 33 × 11 (mean) × 11½ feet (max. draught). Guns: 1 M.G. on A.A. mounting. Designed I.H.P. 1400 = 17 kts., but actually requires about 2000 I.H.P. for this speed. 1 set, triple expansion engines. Boilers: 2 cylindrical. 1 screw. Coal: 130 tons normal; 250 tons max. = about 2000 miles at 15 kts. Complement (as British ship), 77. Employed on Fisheries Protection duties.

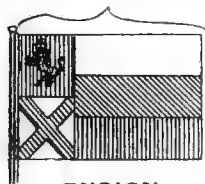
BULGARIAN DANUBE FLOTILLA.

Note.—Under the Treaty of Peace, Bulgaria is only allowed to maintain four fast Patrol Boats and six Vedette Boats on the Danube, for Police and Preventive Duties. This Force is organised on a civilian basis and is under the direction of the Ministry of Commerce.

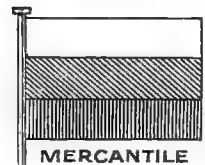
Note that the red of the flag is crimson.

■■■■■ = Red. □ = White. ■■■■ = Green. ■■■■ = Yellow.

Flags.



ENSIGN



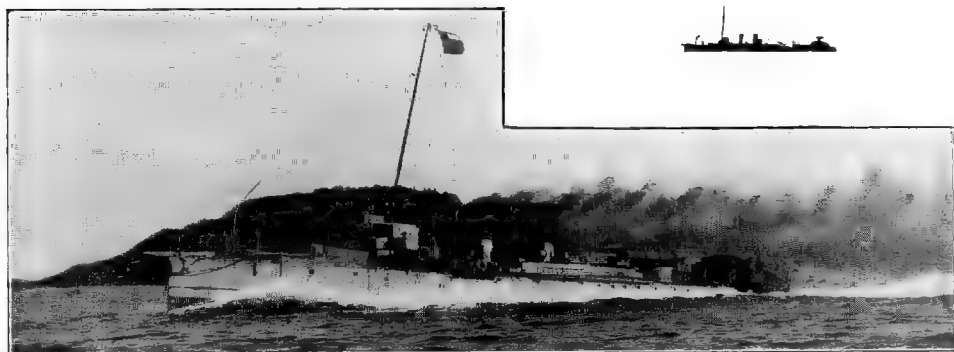
MERCANTILE

Jack: A white flag with a green saltire and superimposed over all the Cross of St. George.

Minister of War and Marine:—Lieut.-General Ivan Velkoff.

Patrol Boats.

SILHOUETTE.



4 *Crescent* boats: **Smyeli, Khrabry, Derzki, Strogi** (built in sections in France; reassembled at Varna, 1907-8). 100 tons. Dimensions: 126½×13½×8½ feet. Armament: 3—3 pdr. Torpedo tubes removed. Designed H.P. 2000 = 26 kts. 1 screw. Du Temple boilers. Coal, 27 tons. Civilian complement, 23.

Motor Vedette Boats.

Minior, Vzrif, Capitan Minkoff, Conductor Dokizanoff. No particulars available. Nos. 1, 2 (ex French C 27, C 30, purchased 1922). 77 tons. 3 sets of 220 B.H.P. standard petrol motors, totalling 660 B.H.P.=17 kts. Petrol: 9 tons. Endurance: 700 miles at 10 kts. Guns: 2—6 pdr. Complement, 26.

River Patrol Boats (on Danube).

Botef, Levski. 12 tons. Armed with spar torpedoes.
Tzar Arsen, Tzar Simeon. No particulars available.

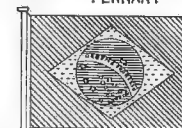
BULGARIA—BRAZIL

BRAZILIAN FLEET.

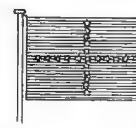
Officially revised by courtesy of the Chief of the Naval Staff, 1929.



PENNANT



ENSIGN



JACK



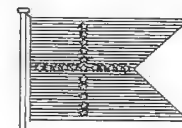
PRESIDENT



MINISTER OF MARINE



ADMIRALTY



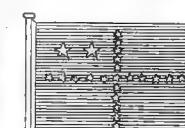
CHIEF OF STAFF



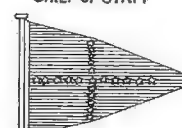
ADMIRAL



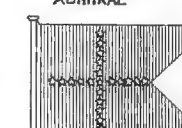
VICE ADMIRAL *



REAR ADMIRAL *

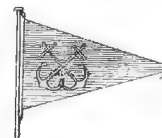


COMMODORE *



COMMANDER *

* NOTE:—IN THESE FLAGS A WHITE "1" IN THE LOWER CANTON ON HOIST SIDE DENOTES SENIORITY



CAPTAIN OF PORT'S PENDANT

Red ■■■■

White □

Blue ■■■■

Yellow ■■■■

Green ■■■■

Uniforms.



Almirante.
(Admiral.)



Vice-Almirante.
(Vice-Admiral.)



Contra-Almirante.
(Rear-Admiral.)



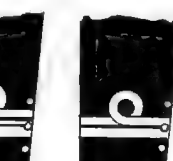
Capitão de Mar e Guerra.
(Captain.)



Capitão de Fragata.
(Senior.)



Capitão de Corveta.
(Junior.)



Capitão Tenente.
(Lieut.-Commander.)



Primeiro Tenente.
(Lieut.)



Segundo Tenente.
(Sub-Lieut.)



Guarda-Marinha.
(Midshipman.)

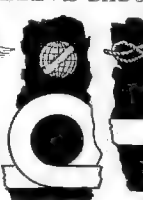


Reserve Officer.

SLEEVE BADGES.



Aviation.



Engineers.



Harbour Master.

All have three buttons towards back of sleeves and across stripes. Deck, Engineer and Aviation Branches all have curl. Other branches have not.

Caps:—As British Navy.

Minister of Marine:—Rear-Admiral A.S. Pinto da Luz.

Chief of Naval Staff:—Vice-Admiral José Maria Penido.

Naval Attaché, London:—Commander José Maria Neiva.

ONE FUNNEL.



PERNAMBUCO



MISSOES.

River Craft.



CEARA (S/M. Dépôt Ship).
(Double hulls at stern.)



FLORIANO.

TWO AND THREE FUNNELS.



MINAS GERAES class (2 ships).



BARROSO.



BAHIA class (2 ships).

Guns in Service.*

Notation.	Calibre.		Length in calibres	Weight of A.P. shell	Muzzle Velocity.	Max. penetration A.P. capped at K.C. at		Danger Space against average ships at			Service rounds per minute
						5000 yards.	3000 yards.	10,000 yards.	5000 yards.	3000 yards.	
HEAVY	inch.	c/m.	cals.	lbs.	ft. secs.	inch.	inch.	...	...	...	2
	12	30.5	45	850	2800	...	...	...	...	...
MEDIUM	9.4	24	45	380	2700	9	11½	...	...	...	8
LIGHT	6	15	40	100	2500	4	5	65	200	420	6
	6	15	50	100	2640	4½	5½	72	240	460	6
	4.7	12	40	45	2150	...	...	...	...	...	8
	4.7	12	50	45	2630	...	...	...	...	...	8
	4	10	50								

* Note. — These particulars of the Brazilian Naval Ordnance must be regarded as only approximate, though they have been officially corrected.

TORPEDO CRAFT.

Scale : 1 inch = 160 feet.



Yarrow type, t.b.d. (10 Pará class.)



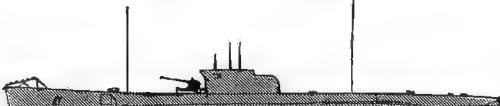
MARANHÃO.

SUBMARINES.

Scale : 1 inch = 80 feet.



F class (3)
(Two folding masts).



HUMAYTA.

Mercantile Marine.

(From "Lloyd's Register" 1929 figures.)
Total gross tonnage, 560,680.

(1907) BATTLESHIPS.

Battleships—BRAZIL

(MINAS GERAES CLASS—2 SHIPS.)

MINAS GERAES (Sept., 1908), **SÃO PAULO** (April, 1909).

Normal displacement 19,200 tons. Full load 21,200 tons. Complement 850.

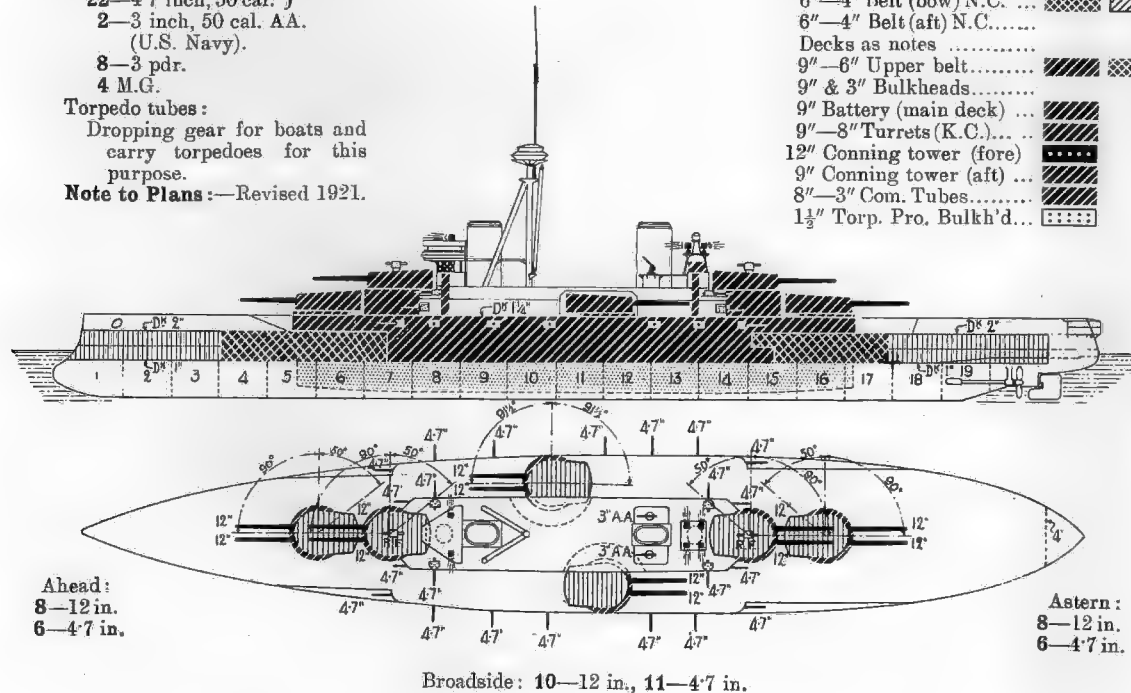
Length (waterline) 533 feet; (p.p.), 500 feet. Beam, 83 feet. Max. load draught, 25 feet. Length (over all), 543 feet.

Guns (Armstrong):
12—12 inch, 45 cal. } Dir. Con.
22—4.7 inch, 50 cal. }
2—3 inch, 50 cal. AA.
(U.S. Navy).
8—3 pdr.
4 M.G.

Torpedo tubes:
Dropping gear for boats and
carry torpedoes for this
purpose.

Note to Plans:—Revised 1921.

Armour (Krupp):
9" Belt
6"—4" Belt (bow) N.C.
6"—4" Belt (aft) N.C.
Decks as notes
9"—6" Upper belt
9" & 3" Bulkheads
9" Battery (main deck) ...
9"—8" Turrets (K.C.) ...
12" Conning tower (fore) ...
9" Conning tower (aft) ...
8"—3" Com. Tubes
1½" Torp. Pro. Bulk'h'd...



SÃO PAULO.

Photo, Cribb (added 1925).

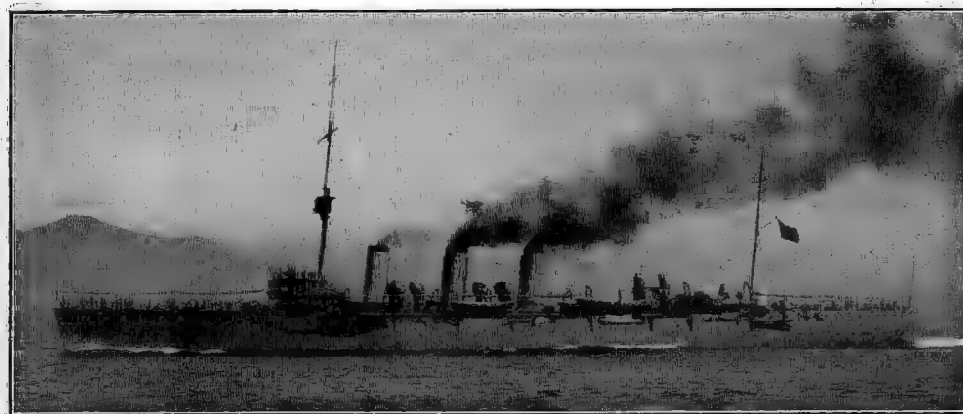
Searchlight Notes: 6 U.S. Navy type, positions as plan and profile.

Name.	Builder.	Machinery.	Laid down.	Completed.	Trials. 30 hour at 1 Full power	Boilers.	Refit.
M. Geraes S. Paulo	Armstrong* Vickers*	Vickers* Vickers*	1907 1907	Jan. '10 July '10	16,177=19'13 25,519=21'2 16,067=19'85 25,517=21'2	Babcock Babcock	1919. 1921.

General Notes.—Both ships were somewhat over normal displacement on trials. Built under 1907 Naval Programme. The third ship of this programme was *Rio de Janeiro*, sold to Turkey as *Sultan Osman Birindijieh*, and requisitioned for British Navy, Aug. 1914, as H.M.S. *Agincourt*.

* Note.—*Sao Paulo* underwent large refit at New York Navy Yard from May 1917–1919, it being expected that she might join British Grand Fleet. A large amount of material was sent out from England for this purpose. During 1919, she served with U.S. Atlantic Fleet for exercise at Guantanamo Bay. *Minas Geraes* has also been refitted at New York Navy Yard, at a cost of about two million pounds. She received inter-communication Wireless-telephony sets. These ships are at present the best in the Brazilian Navy. They are officially stated to be in a most efficient condition.

(1908) Cruisers (Cruzadores).



BAHIA (as altered).

1926 Official Photo.

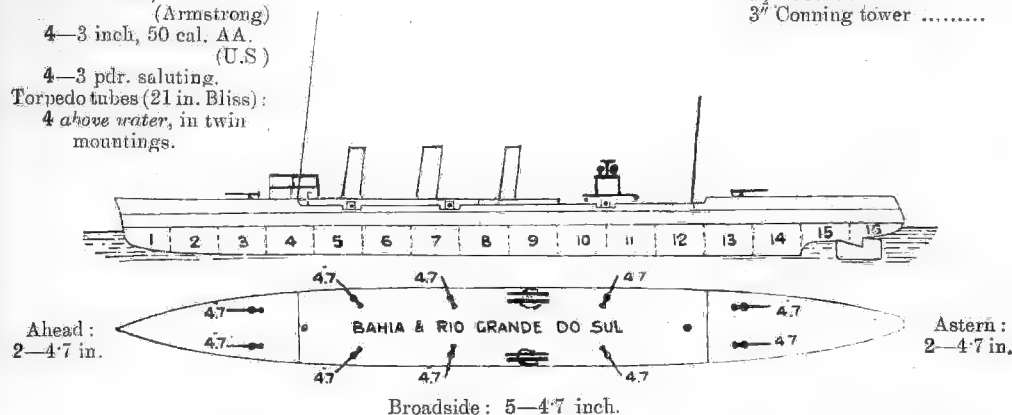
BAHIA (Jan., 1909) & **RIO GRANDE DO SUL** (April, 1909).

Normal displacement 3150 tons. Complement 400.

Length, { (p.p.), 380 feet. } Beam, 39 feet. Mean draught, 13 feet 7½ ins.
{ (o.a.), 401½ ,, }

Guns:
10—4·7 inch, 50 cal.
(Armstrong)
4—3 inch, 50 cal. AA.
(U.S.)
4—3 pdr. saluting.
Torpedo tubes (21 in. Bliss):
4 above water, in twin
mountings.

Armour:
1½" Deck.....
3" Conning tower



Machinery: 3 Brown-Curtis geared turbines. 3 screws. Boilers: 6 Thornycroft oil-burning. S.H.P. 22,000 = 27 kts. 1926 *Trials*: *Bahia*, 23,000=28.6. Oil fuel: 640 tons. Endurance: about 2400 miles at 24 kts., 3092 miles at 18 kts., 6600 miles at 10 kts.

Gunnery Notes.—Fire control originally consisted of voice tube from control stations to bridge and to plotting rooms on second deck—thence to battery. 1 R.F. and 2 S.L., 1 S.L. over Chart house and 1 on after S.L. platform. These arrangements have been improved, and Director system is now being installed.

General Notes.—Built by Armstrong; engineered by Vickers; both begun 1908 (under 1907 Naval Programme) and completed 1910. Completely refitted 1925-26, by Companhia Nacional de Navegação Costeira, Rio, new engines and boilers (to burn oil fuel) being installed by Messrs. Thornycroft. Heating Surface, 26,027 sq. ft.

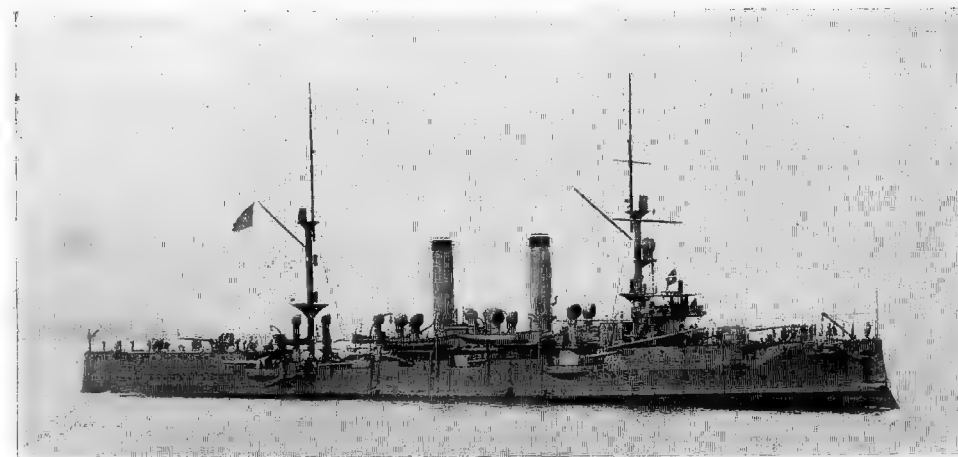
(1896) Coast Defence Vessel (Encouraçado)



1919 Photo, Commr. B. D. Holberton, R.N.

FLORIANO (1899), built at La Seyne. Displacement 3162 tons. Complement, 200. Length (p.p.), 267½ feet. Beam, 48 feet. Max. draught, 13½ feet. Guns: 2—9·4 in., 45 cal.; 4—4·7 in., 50 cal. Armour (Harvey-nickel): 13½" Belt (amidships), 4" Belt (ends), 1½" Deck (reinforcing belt), 8" Turrets, 3" Casemates, 5" Conning tower. Machinery: 2 sets triple expansion. 2 screws. Boilers: (1912), Babcock. Designed H.P. 3400=15 kts. Coal: 246 tons. Radius of action: 2500 miles at 10 kts. Refitted 1924-1925. Sister ship *Deodoro*, sold to Mexico.

(1895) Cruiser.



1919 Photo, Commr. B. D. Holberton, R.N.

BARROSO (Armstrong, 1896). 3450 tons (sheathed and coppered). Comp. 375. Dimensions (p.p.): 330 × 43½ × 16½ feet. Guns (Armstrong): 6—6 in., 50 cal.; 4—4·7 in., 50 cal.; 4—6 pdr. Armour: 3½" Deck (amidships). Machinery: 2 sets 3-cyl. triple expansion. 2 screws. Boilers: cylindrical. Designed H.P. forced 7500=20.5 kts. Coal: normal 450 tons; maximum about 850 tons. Endurance: 6500 miles at 10 kts. Refitted 1916-17. Only improvised voice pipes for fire control.

TORPEDO CRAFT AND SUBMARINES.

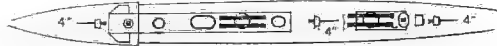
Torpedo Craft and Submarines—BRAZIL

11 Destroyers.

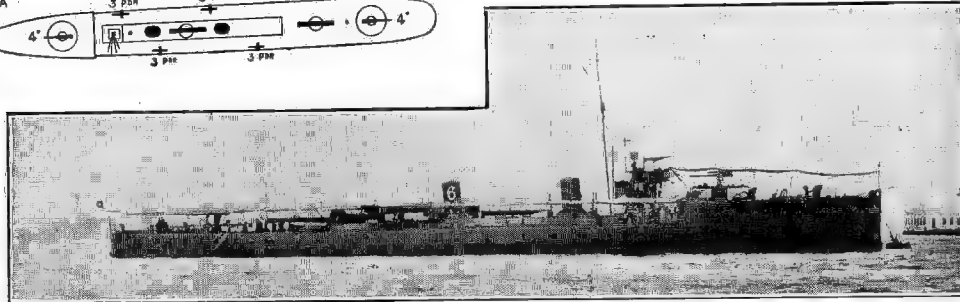
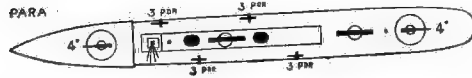


Photo added 1923.

1 *Thornycroft* type: **Maranhão** (ex H.M.S. *Porpoise*, 1913). Displacement: 934 tons. Dimensions: $265\frac{1}{2} \times 26\frac{1}{2} \times 9\frac{1}{2}$ (minimum), $10\frac{1}{2}$ (maximum) draft. Guns: 3—4 inch, 1—2 pdr. Tubes: 4—21 inch. in pairs. Designed H.P. 22,500=31 kts. Machinery: Parsons' turbines. Yarrow boilers. Oil: 250 tons. Complement. 100.



Note.—Reported to have lost greatly in speed. Employed as Stokers' Training Ship at present.



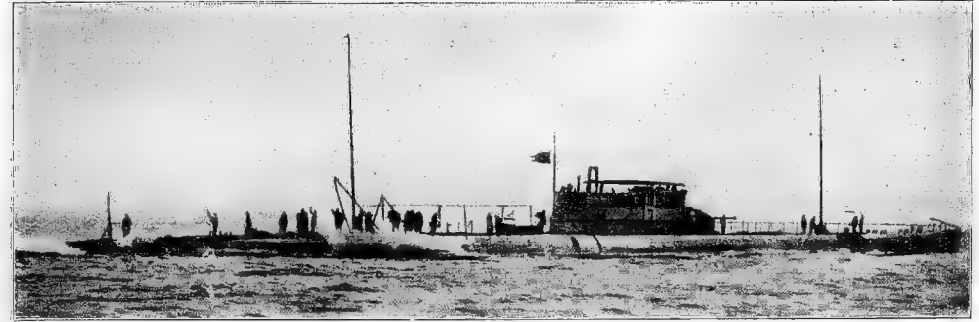
1918 Photo.

*10 *Farrow* type: **Amazonas, Matto Grosso, Piahy, Pará** (all launched 1908), **Rio Grande do Norte, Parahyba, Alagoas, Santa Catharina** (all launched 1909), **Parana, Sergipe** (both launched 1910). Displacement 560 tons. Dimensions: $240 \times 23\frac{1}{2} \times$ (Mean draught) $7\frac{1}{2}$ feet. Armament: 2—4 inch, 4—3 pdrs., 2—18 in. tubes. Designed H.P. 8000 = 27 kts. Machinery: 2 sets triple expansion reciprocating. 2 double-ended Yarrow boilers. Majority of these boats retubed 1917-18. Coal: 140 tons. Nominal radius: 1600 miles at 15 kts. On acceptance trials with 6563 to 8877 H.P. they made 27.1 to 28.7 kts. No effective means of controlling fire of guns or torpedo tubes. Complement, 75.

Note.—The numbers on after funnel are thus: 1, *Amazonas*; 2, *Para*; 3, *Piahy*; 4, *R. G. do Norte*; 5, *Parahyba*; 6, *Alagoas*; 7, *Sergipe*; 8, *Parana*; 9, *S. Catharina*; 10, *Matto Grosso*.

* In bad condition. These boats are continually under repair, 5 being kept in commission and 5 in reserve under refit.

4 Submarines.



HUMAYTA.

1929 Photo, Captain Mateo Mille, R. Sp. N.

1 *Ansaldo* type: **Humayta**. Ansaldo San Giorgio Co., Spezia, April, 1927. Displacement: 1450 tons *surface*, 1884 tons *submerged*. Dimensions: $284\frac{1}{2} \times 25\frac{1}{2} \times 14$ feet. Fiat type Diesel engines. Designed H.P. $\frac{4900}{2200} = \frac{18.5}{10}$ kts. Armament: 1—4 inch, 4 M.G., 6—21 inch tubes. Tube aft for minelaying (16 mines carried). Similar in general design to Italian *Balilla* type (*vide* notes in Italian Section for further details). Ordered in 1926 and completed in 1927, but not delivered in Brazilian waters until two years later.

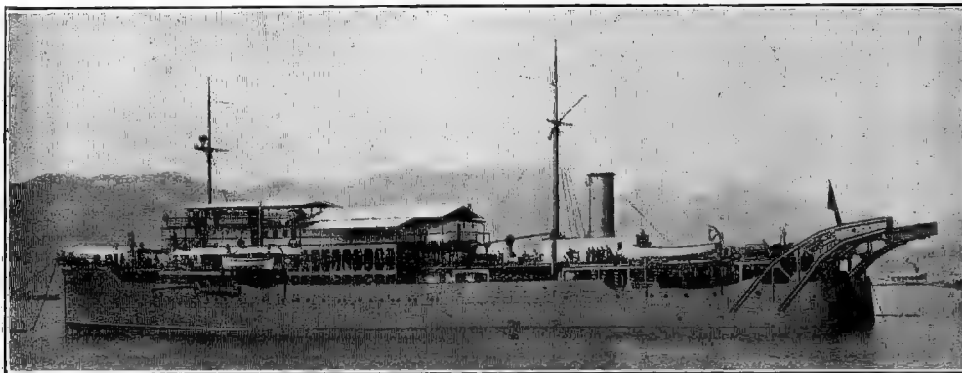


1917 Photo, by favour of Ansaldo San Giorgio Co.

3 *Laurenti-Fiat* type: **F5, F3, FI** (Spezia, 1913-14). Built by Fiat-San Giorgio Co. Dimensions: $150 \times 13.8 \times 9.8$ to 12 feet draught. Displacement: 250 tons *on surface*, 305 tons *submerged*. Machinery: 2 sets 350 H.P. 6-cylinder, 2-cycle Fiat Diesel engines *on surface*=700 H.P. 2 sets 250 H.P. electric motors+batteries=500 H.P. *submerged*. Speeds: (maximum) 13½ kts. *on surface*, 8 to 8½ kts. *submerged*. Radii of action: *on surface* about 800 miles at full speed, 1600 miles at 8½ kts; when *submerged*, 18 miles at full speed, or 100 miles at 4 kts. Torpedo tubes: 2—18 inch in bows. Complement about 20.

Submarine Carrier, Depot, Docking and Salvage Ship.

(Also serves as Training Ship for submarine service.)



1917 Photo, by courtesy of the Fiat San-Giorgio Co.

CEARA (Spezia, 1915). Length (p.p.) 328 feet. Beam, 52 feet. Draught and displacement (with all stores) vary thus : (a) with dock empty and dock-gate closed 4100 tons at 14 feet draught ; (b) with dock-gate open and dock flooded to float submarine in, 4130 tons at 17½ feet ; (c) with gate closed and submarine docked, 4560 tons at 15 feet ; (d) with gate closed and submarine under hydraulic pressure test in dock, 6460 tons at 20½ feet ; (e) with dock empty and gate closed, and when raising submarines by double cranes at stern, 4615 tons at 15 feet. Machinery : 2 sets 6-cylinder, 2-cycle Fiat-Diesel engines. 4100 B.H.P. = 14 kts. Fuel : 400 tons (own bunkers) + tons for submarines (sufficient fuel carried to fill tanks of six submarines four times). Radius of action : 4000 miles at 10 kts. Guns : 4—4 inch, 2 smaller. Built by Fiat-San-Giorgio Co. Completed 1916.

Note.—This ship has been specially designed and completely equipped to serve as a depot ship, salvage ship, and floating dock for a flotilla of 6 submarines. There is a central, circular caisson dock 216½ feet long (to dock submarines up to 198 feet length and 23½ feet beam) between the double hulls, and two salvage cranes at stern for raising 400 tons deadweight. Equipment for service to submarines includes two 150 Kw. charging dynamos, two electric-driven and one steam-driven 75-150 atmos. air compressors, refrigerating plant, workshops, powerful pumps to empty dock in 2 hours, &c. ; carries spare batteries, torpedoes, stores, &c., for 6 submarines.

Fleet Collier.



1920 Photo, Gieves, Ltd.

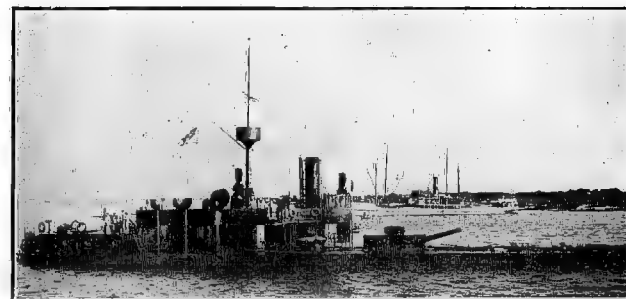
BELMONTE (ex-German S.S. *Valesia*, Rostock, 1912). 5227 tons gross. Dimensions : 364½ × 51 × feet. Guns : 4—4.7 in., 6—6 pdr. H.P. 2700 = 12 kts. Can take about 6500 tons as cargo.

Note.—Above ship seized in Brazilian port, 1917, after declaration of war against Germany.

Oiler.

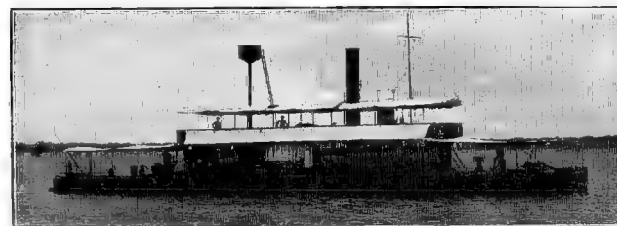
NOVAES DE ARREU (Rotterdam, 1918). Displacement, 500 tons. Dimensions : 134½ × 23 × 12 feet mean draught. H.P. 400 = 10 kts. Oil : 400 tons.

River Craft.



1916 Photo, Abrahams.

PERNAMBUCO (1909-10, River Monitor, built at Rio.) 470 tons. Dimensions : 146 × 24 × 5½ feet. H.P., 800 = 11 kts. Coal : 45 tons. Guns : 3—4.7 inch, 10 machine. Armour : 6.6"—4" belt, 4" deck, 3½" conning tower, 6" turret. 2 screws. Took 20 years to build.



MISISOES (Yarrow, 1904). 110 tons. Dimensions : 120 × 20 × 2 feet. Armament : 1—3.4 inch (15 pdr.) howitzer, 1—6 pdr., 4 maxims. H.P., 300 = 11 kts. Complement, 30.

TEFFÉ (1890-92, refitted 1917). River Gunboat of 33 tons. Dimensions : 90 (p.p.) × 15 × 5 feet. Guns : 1—3 pdr., 2 M.G. H.P. = 11 kts. Coal : 7 tons.

OYAPOCK (—). Despatch Vessel of 195 tons, 14 kts. speed. Guns : 1—3 pdr.

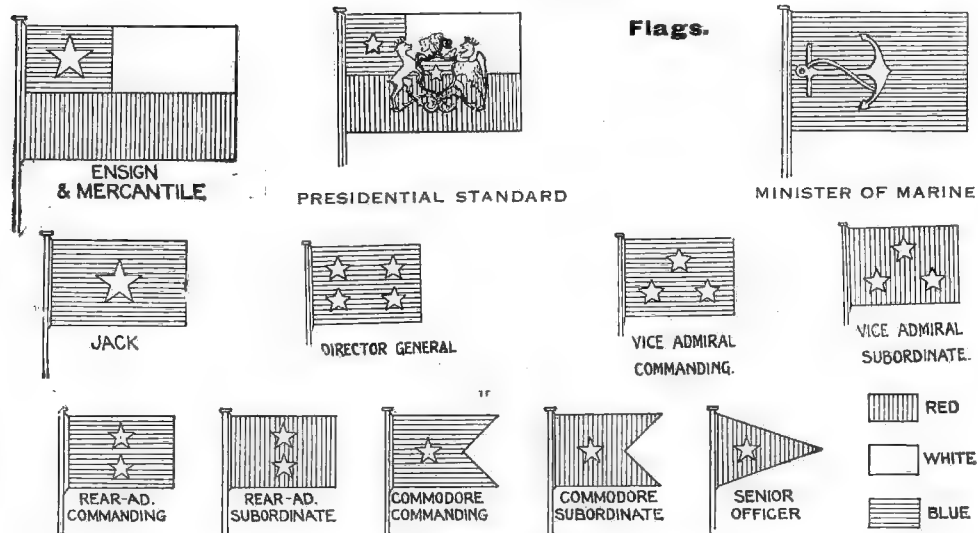
AJURICABA (Ross & Duncan, Glasgow, 1923). 120 tons. Dimensions : 125 × 18 × 9 feet. Coal : 35 tons. Guns : 4 M.G.

AMAPA (1917). 320 tons. Dimensions : 118 × 23 × 19 feet. Guns : 2—6 pdr., 4 M.G. Speed, 15 kts.

CHILEAN FLEET.

General Notes—CHILE

Officially revised by courtesy of the Jefe del Estado Mayor General de Marina, Santiago, 1929.



Uniforms.



Corresponding British or U.S. } Vice-Ad. Rear-Ad. Captain. Commander. Lieut. Comdr. Lieut. (Senior). Lieut. (Junior). Sub. Lieut. Midshipman.

Other Branches the same with colours as follows:—Engineers (blue), Paymasters (white), Doctors (red), Chaplains (purple).

Minister of Marine: C. O. Frödden, (Commander).
 Chief of Naval Commission (London): Rear-Admiral L. Escobar M.
 Naval and Air Attaché (London): Commander A. Obrecht.
 Personnel: About 8000, all ranks.

Special Note.

The services of a British Naval Mission, under Commander F. H. Pegram, R.N., comprising six naval and one air officers are at present lent to the Chilean Navy.

Naval Bases.

TALCAHUANO. Two dry docks, 614 × 87 × 30½ feet and 800 × 116 × 36 feet respectively. One small floating dock, 216 × 42 × 15 feet. Gunnery, Torpedo, Submarine, and other Training Establishments here.

VALPARAISO. One small steel floating dock privately owned, 314 × 65 × 21 feet (4500 tons capacity). Naval Academy for training of executive and Engineering branches here, also schools for Communications, Artificers, Coast Artillery, Navigation, etc. The principal Naval Aviation base is at Quinteros Bay, 20 miles north of Valparaiso.

There is also a small steel floating dock at Mejillones.

Naval Ordnance. (All details unofficial.)

	Type*	Calibre.		Length. (cals.)	Weight of Gun. (tons.)	Weight of Proj. (lbs.)	Weight of Charge. (lbs.)	M.V. (ft.-secs.)	M.E. (ft.-tons.)	Max. R.P.M.
		Inches.	Cm.							
HEAVY	A	14"	35.6	45	85	1400	324	2700	70,700	2
MEDIUM	C	9.4"	24	36	24	374	198	2230	12,421	..
	A	8"	20.3	45	18.5	210	44	2650	10,226	4
	A	8"	20.3	40	15	..	..	2582	..	..
	A	6"	15.2	50	8½	100	31	3000	6240	9
	A	6"	15.2	40	6¾ cwt.	100	18.3	2500	4334	8
	A	4.7"	12	50	63½	45	10½	2953	2721	12
	A	4.7"	12	45	53	45	8	2552	2110	10
	C	4.7"	12	45	..	..	..	..	..	..
LIGHT	A	4"	10.2	..	..	..	..	..	..	..

A = Armstrong ; C = Schneider-Canet.

14 inch, 50 cal., in *Alm. Latorre*.

9.4 inch, 36 cal., in *C. Prat*.

8 inch, 40 cal., in *O'Higgins, B. Encalada*.

6 inch, 50 cal., in *Alm. Latorre* and *Chacabuco*.

6 inch, 40 cal., in *O'Higgins, B. Encalada, M. Zenteno*.

4.7 inch in *Alm. Riveros* class (3).

4.7 inch in *C. Prat, Chacabuco, G. Baquedano*.

4 inch in *Alm. Lynch* class (2) and *Alm. Riveros* class (3).

Torpedoes: 21 inch (heater), and 18 inch.

Mines: Similar to British pattern.

Organization, 1929.

Main Squadron: *Gen. O'Higgins, Blanco Encalada, Chacabuco; Uribe, Riveros, Condell; Prat, H 1, H 2, H 6.*

Mercantile Marine.

(From "Lloyd's Register" 1929 figures). Total gross tonnage, 154,563.

ONE FUNNEL.



GENERAL BAQUEDANO.
(Training Ship.)

TWO FUNNELS.



CAPITAN PRAT.



ALMIRANTE LATORRE.
(Now has W.T. Main Topgallant mast; aircraft platform removed.)



MINISTRO ZENTENO.



CHACABUCO.



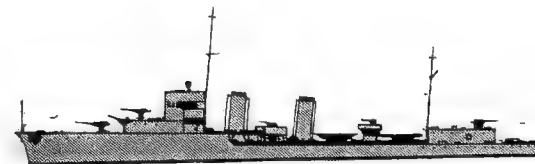
BLANCO ENCALADA.

THREE FUNNELS.



GENERAL O'HIGGINS.

TORPEDO CRAFT.



SERRANO class (6).

SUBMARINES. Scale: 1 inch=80 feet.



H class (6 boats).
(Now have metal bridges.)



Alm. Williams class (2).



Alm. Riveros.



Alm. Lynch class (2).

1911 BATTLESHIP. (re-purchased 1920).

Battleship—CHILE

ALMIRANTE LATORRE (ex British *Canada*, ex Chilean *Almirante Latorre*, Nov., 1913.) Displacement, 28,000 tons (about 32,000 full load). Complement, 1176.
Length (p.p.), 625 feet. (o.a.), 661 feet. Beam, 92½ feet. { Mean draught, 29 feet. }
{ Max. " 32 " }

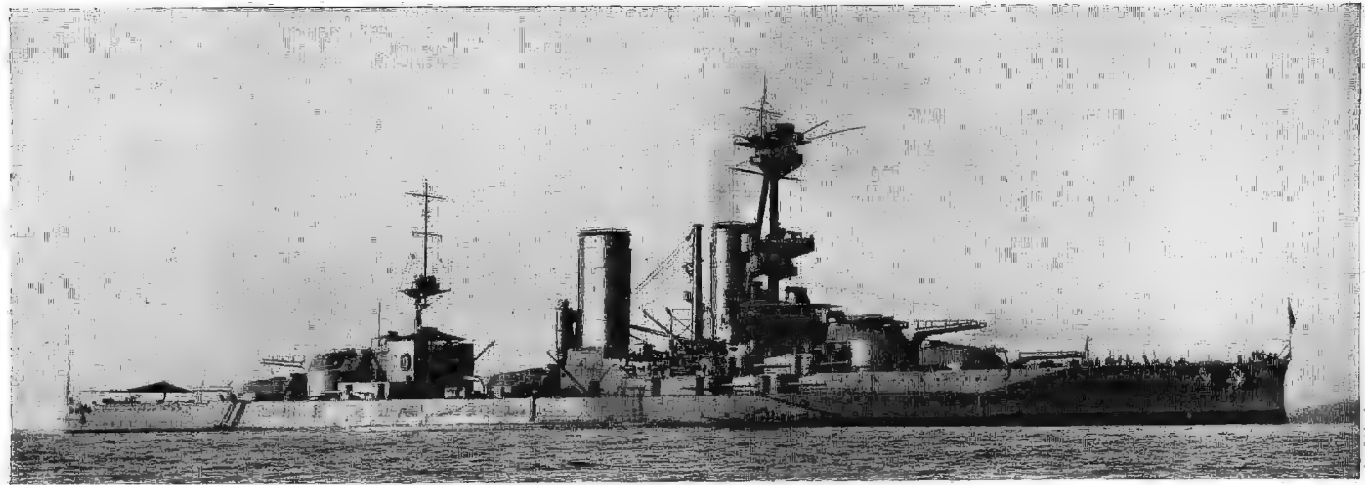
Guns (Armstrong):
10—14 inch, 45 cal. } Dir. Con.
14—6 inch 50 cal. }
2—3 inch (anti-aircraft)
4—3 pdr.
(2 landing)
4 M.G.
Torpedo tubes (21 inch):
4 submerged.

Armour:
1" Shelter (over casemates)
1" Fo'xle (over battery)
1½" Upper (outside battery)
1½" Main (aft)
1" Protective
2" (forward) } lower
4" (aft) }
Torpedo Protec.:
2"—1½" Bulkheads (mags., &c.) Sections 6-8, 15, 19-21 on plans.

Decks.

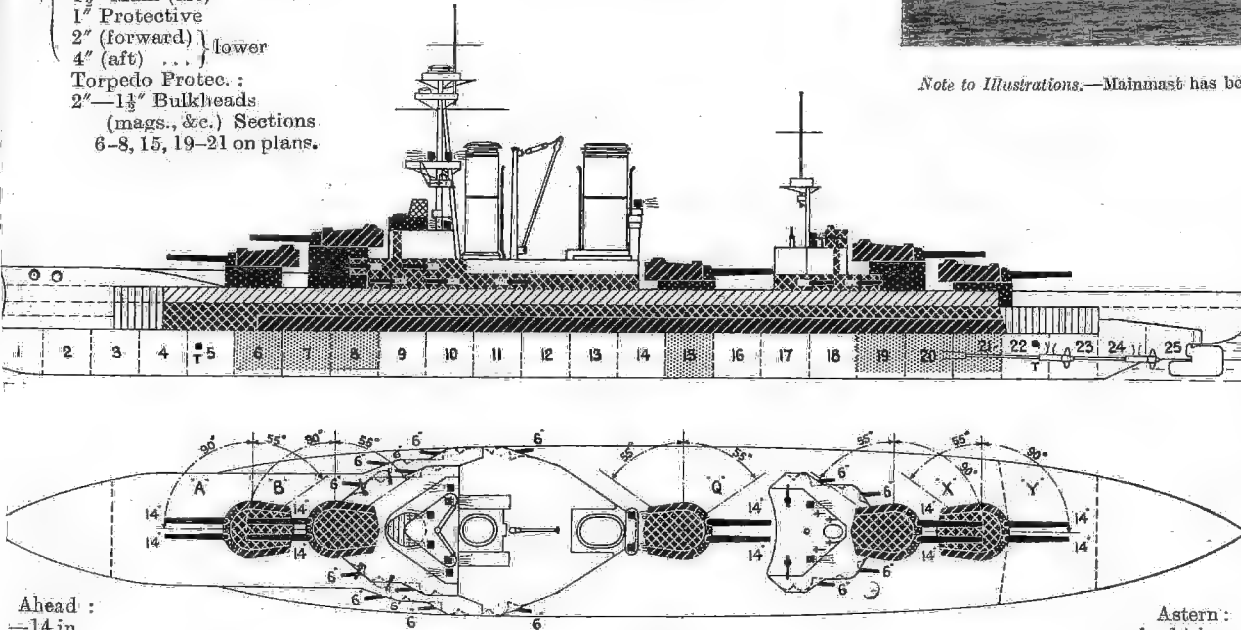
Armour:
10" Lower belt
7" Middle belt
4½" Upper belt
6"-4" Belt (ends)
4½", 4" B'lkh'ds (f. & a.)
6" Batteries
10" Barbettes
10½"-9" Gunhouses
3" C.T. base*
11" C.T. (6"-3" hood)
6" Fore com. tube
6" Torpedo C.T.
6" Aft com. tube

Vertical.
*Not shown on plans.



Note to Illustrations.—Mainmast has been heightened for wireless purposes. Aeroplane platforms on turret tops have been removed.

1922 Photo.



Ahead:
—14 in.
to 8-6 in.

Broadside: 10—14 in., 7—6 in., 2—21 in. tubes.

Astern:
4—14 in.
2 to 6-6 in.

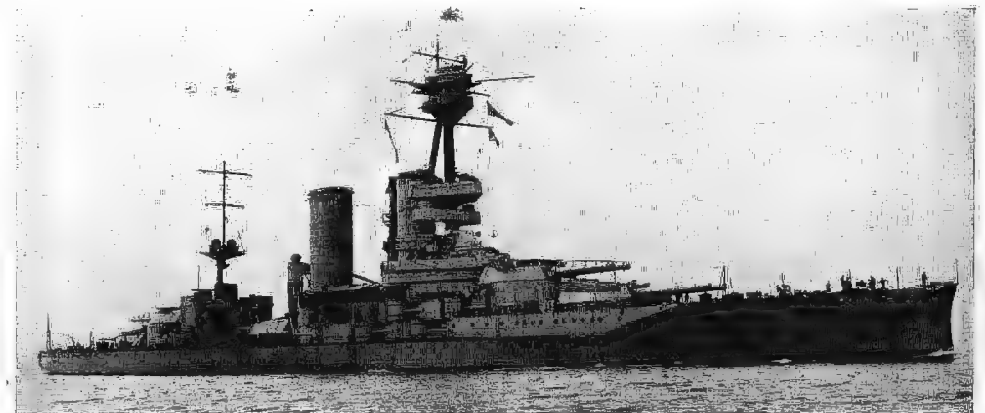
Machinery: Turbine, 4-shaft: (L.P.) Parsons; (H.P.) Brown-Curtis. Boilers: 21 Yarrow. Designed H.P. 37,000 = 22.75 kts. Coal: normal, 1150 tons; maximum, 3300 tons. Oil: 520 tons. Endurance: 4400 miles at 10 kts.

Gunnery Notes.—14-inch have a range only limited by max. visibility. Originally had 16—6 inch, but the 2—6 inch on upper deck, abeam of after funnel, were removed and ports plated over. Reason for removal was because guns were only a few feet from muzzle of "Q" turret 14-inch guns on extreme bearing and were damaged by blast.

Armour Notes.—Barbettes, 6" and 4" as they descend behind belts.

Searchlights.—8—24" and 2—20" (signalling) Harrison lamp type burners.

Aircraft Notes.—Anti-aircraft guns on after superstructure.



1919 Photo, Crabb, Southsea.

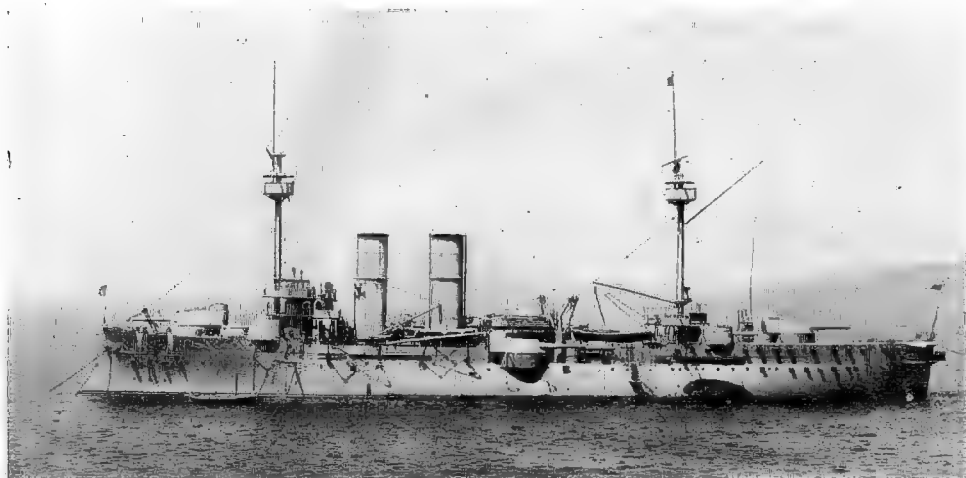
Engineering Notes.—Reported that the Chilean Ministry of Marine stipulated, at the last moment, that full speed should be attained without using forced draught. Funnels were accordingly raised to increase natural draught. Reported to have made 23-24 kts. in service.

Torpedo Notes.—Tubes are 21 inch Armstrong side-loading, worked by hydraulic power.

General Notes.—Laid down for Chile by Armstrongs, in Nov. 1911, as the *Valparaíso*, her name being altered afterwards to *Almirante Latorre*. Purchased for British Navy on outbreak of War and re-named *Canada*. Completed Sept. 1915. Additional protection, &c., added during War is said to have raised her normal displacement to over 30,000 tons. First designed with secondary battery of 22—4.7 inch, and 2 stump masts abeam aft. Re-purchased by Chile, April, 1920. Her sister ship, *Almirante Cochrane*, was purchased and taken over for British Navy in 1917, re-named *Eagle*, and modified for service as an Aircraft Carrier. (See British Navy Section). Arrived at Devonport in summer of 1929 to be refitted in the dockyard under a special contract with new machinery supplied by Vickers-Armstrongs, Ltd. Bulges will be fitted, and masts and bridgework will undergo slight modifications.

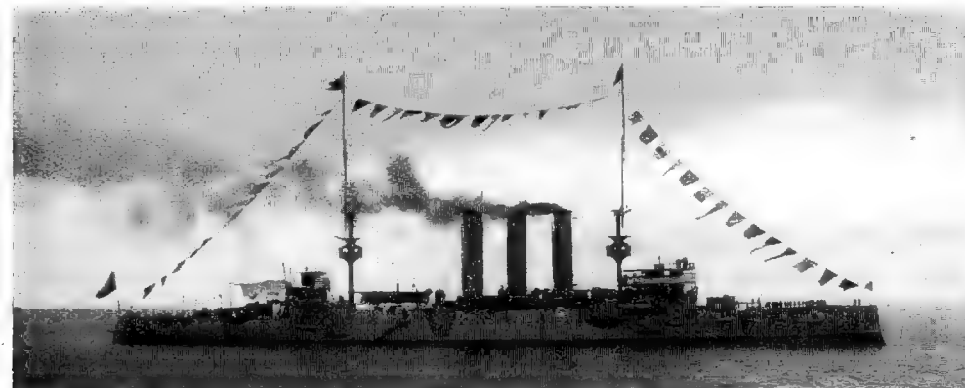
(1888) Coast Defence Battleship.

(Temporarily in use as Submarine Dépôt Ship).



1919 Copyright photo, G. Allan, Valparaíso

CAPITAN PRAT (Laf. Seyne, 1890). *Reconstructed* 1909. 6902 tons (sheathed and coppered). Complement 500. Length (p.p.), 328 feet. Beam, 60½ feet. *Maximum* draught, 22½ feet. Guns (Canet): 4—9.4 inch, 36 cal., 8—4.7 inch, 45 cal., 8—6 pdr., 1—3 pdr., 1—1 pdr. Torpedo tubes (18 inch): 2 *above water*. Armour (Creusot): 12" Belt (amidships), 3" Deck (flat on belt), 10½" Barbettes, 2" Barbette hoods, 4" Redoubt (amidships), 2" Small turrets. Machinery: 2 sets horizontal triple expansion. 2 screws. Boilers: new in 1909, 12 Babcock. H.P. 12,000=18 kts. (about 16 to 18 kts. now). Coal: *normal* 400 tons; *maximum* 775 tons=circa 4650 miles at 10 kts. *Prat* was the first ship to have electrically manoeuvred turrets.

(1896) Armoured Cruiser.

1920 Photo, T. de N. M. Mille, R.S.N.

GENERAL O'HIGGINS (Armstrong, 1897). 8500 tons. Sheathed and coppered. Complement 700. Length (p.p.), 412 feet. Beam, 62½ feet. *Max* draught, 22 feet. Guns (Armstrong): 4—8 inch, 40 cal. 10—6 inch, 40 cal., 13—12 pdr. (1 field), 4 M.G. Torpedo tubes (18 inch): 2 *submerged*. Armour (Harvey-nickel): 7"–5" Belt (amidships), 2" Deck (slopes), 7½" Port plates to 8 inch gun turrets, 6" Hoists to these, 6" Gun houses to 6 in. guns, 6" Casemates (6), 9" Conning tower. Machinery: 2 sets triple expansion. 2 screws. Boilers: 30 Belleville (in 3 groups). Designed H.P. *natural* 10,000=19 kts.; *forced* 16,000=21.5 kts. (still steams very well and can do 21 kts. now). Coal: *normal* 700 tons; *maximum* 1200 tons. Endurance: (a) 2250 miles at 20 kts., (b) 6000 miles at 10 kts. Large re-fit 1928–29.

(1897) Protected Cruiser.

1919 Copyright photo, G. Allan, Valparaíso.

CHACABUCO (Armstrong, 1898, purchased 1902). 4500 tons. Complement 400. Length (p.p.), 360 feet. Beam, 46½ feet. *Maximum* draught, 17 feet. Guns (Armstrong): 2—6 inch, 50 cal. 10—4.7 inch, 50 cal., 5—12 pdr., 1—3 pdr. Armour (Harvey nickel): 4½" Deck (amidships), 1½" Deck (ends), 4½" Fronts to 6 in. gun shields, 2½" Sides to 6 in. gun shields, 2½" Shields to 4.7 in. guns, 5" Conning tower. Boilers, cylindrical. I.H.P. 15,500=24 kts. *forced*. Still steams well, and can do 23 kts. now. 2 screws. Coal: *normal* 300 tons; *maximum* 1028 tons. Electric training and elevating gear to 6 inch guns. Laid down at Elswick, 1897, as a speculation. Completed 1902, and purchased by Chile.

(1896) Protected Cruiser.

1919 Copyright photo, G. Allan, Valparaiso.

MINISTRO ZENTENO (Armstrong, 1896). 3420 tons (sheathed and coppered). Complement, 350. Length, (p.p.), 330½ feet. Beam, 43½ feet. *Max.* draught, 16½ feet. Armament: 8—6 in. (40 cal.), 1—1 pdr., 2 Maxims. Armour: 3½" Deck, 4" Conning tower. Designed H.P. 7500=20 kts. (16 to 18 kts. now). Cylindrical boilers. Coal: *maximum* 850 tons. Endurance: 6450 miles at 10 kts.

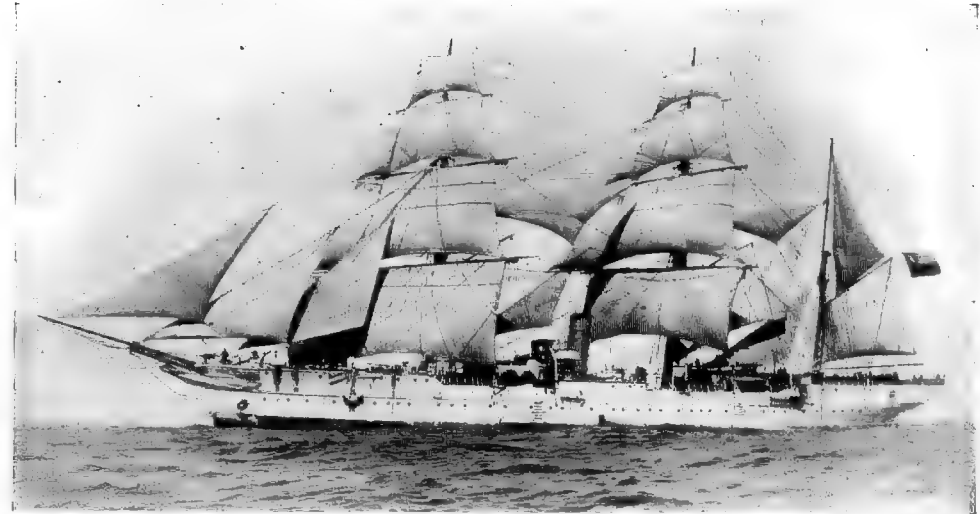
Note.—Employed as tender to Gunnery School.

(1893) Protected Cruiser.

1919 Copyright photo, G. Allan, Valparaiso.

BLANCO ENCALADA (Armstrong, 1893). 4420 tons (sheathed and coppered). Complement 427. Length (p.p.), 370 feet. Beam, 46½ feet. *Maximum* draught, 19½ feet. Armament: 2—8 inch, 40 cal., 10—6 inch, 40 cal., 5—12 pdr., 1—1 pdr., 2 Maxims. Armour: 4" Deck, 6" Shields to 8" guns, 6" Conning tower. Boilers: cylindrical (retubed 1908-9). Designed H.P. *forced* 14,500=22.75 kts. (about 21.5 kts. now.) Coal: *maximum* 850 tons. Endurance: 5000 miles at 10 kts. Refitted, 1920, at Talcahuano.

Note.—Laid down Sept., 1892, launched a year later, and completed April, 1894.

Sloop (and Training Ship).

1919 Copyright photo, G. Allan, Valparaiso.

GENERAL BAQUEDANO (1898). 2500 tons, sheathed and coppered. Armed with 4—4.7 inch 45 cal., 4—6 pdr. I.H.P. 1500 = 13.75 kts. Belleville boilers (renewed 1924). Coal: 300 tons. Built by Armstrong, Whitworth & Co. Ltd. (Refitted 1923-24).

Submarines.

3 *Vickers-Armstrong*: **Capitan O'Brien** (October 2nd, 1928), **Capitan Thompson**, **Almirante Simpson**, (both Jan. 15th, 1929). Displacement $\frac{15\frac{1}{2}}{16\frac{1}{2}}$ tons. Dimensions: 260 x 28 x 13½ feet draught. H.P. $\frac{2750}{1500} = \frac{15}{10.25}$ kts. Fuel: 200 tons. Guns: 1—4 inch. Tubes 8—21 inch. (6 bow, 2 stern). Of same general design as British "O" type. Built at Barrow-in-Furness, 1928-29.

6 *Holland*: **H1, H2, H3, H4, H5, H6** (Fore River Co., U.S.A., 1915-17). Displacements: $\frac{36\frac{1}{2}}{43\frac{1}{2}}$ tons. Dimensions: 150½ x 15½ x 12½ feet. H.P. $\frac{480}{320} = \frac{12.75}{10.25}$ kts. Machinery: *for surface* 2 sets 240 H.P. Nelsco Diesel engines. Endurance: 2800 miles at 11 kts. *on surface*; 30 miles at 5 kts. *submerged*. Oil: 17½ tons. Torpedo tubes: 4—18 inch (bow). Complement 22.

Notes.—These boats were originally H13 and H16—20 of the British H11—20 group of submarines, built by the Fore River Co., U.S.A., during 1915. The Admiralty intended to take them over and equip them with torpedo tubes at the Canadian Vickers Co. Yard at Montreal—provided that these boats could legally be delivered in an unarmed state. The U.S. Government decided the submarines could not leave any U.S. port, so long as the United States remained neutral, and all the boats were interned at Boston. They were released on the U.S. declaration of war, 1917. With the approval of the U.S. authorities, the above six boats were ceded to Chile by Great Britain, in part payment for the Chilean warships building in British yards in August, 1914, and appropriated for the British Navy.



H 2.

1919 Copyright photo, G. Allan, Valparaiso.

7 (+ 4 building or completing) Destroyers.

No.	Type	Date	Dis- place- ment	H.P.	Max. speed	Fuel	Com- ple- ment	T. tubes	Max. draught
6	<i>Serrano</i> (T).	<i>Bldg.</i>	tons. 1430	28,000	kts. 35	tons 320 oil	130	6	feet 12 $\frac{2}{3}$
3	<i>Alm. Riveros</i> (W)*	'11-'15	1730†	30,000	31·5†	403 coal, 83 oil	205	4	11 $\frac{3}{4}$
2	<i>Alm. Lynch</i> (W)	'11-'14	1730	30,000	31†	427 coal, 80 oil	160	6	11

(T)=Thornycroft. (W)=White. (t)=Turbines.

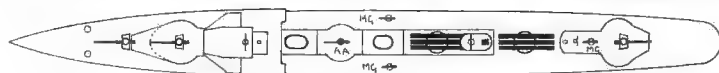
*When in British Navy 1914-20, these three boats were rated as Flotilla Leaders. The two *Alm. Lynch* boats, being of much the same design, can also be rated as Leaders.

†Average figures. For individual details, see below.



SERRANO.

1928 Photo, by favour of Builders

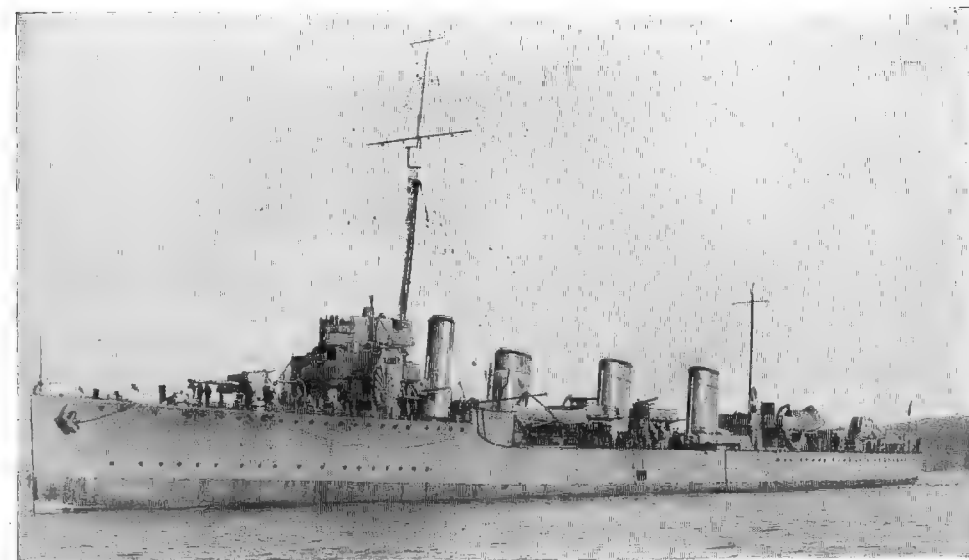
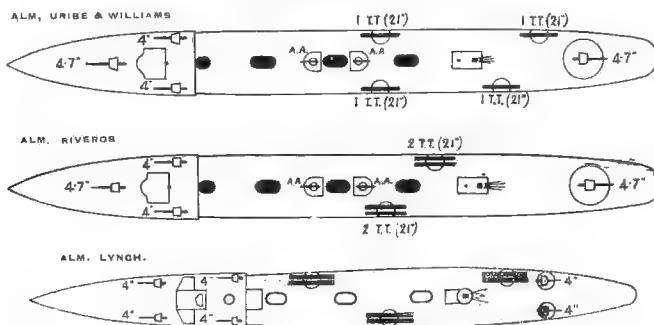


(Plan by courtesy of Messrs. John I. Thornycroft & Co. Ltd.)

6 Serrano Class.

6 Thornycroft type. *Serrano* (Jan. 25th, 1928), *Orella* (March 8th, 1928), *Riquelme* (May 26th, 1928), *Hyatt* (July 21st, 1928), *Aldea* (Nov. 29th, 1928), *Videla* (Oct. 16th, 1928). All laid down June-July, 1927. "Standard" displacement, 1090 tons; full load, 1430 tons. Dimensions: 288 $\frac{1}{2}$ (p.p.), 300 (o.a.) \times 29 \times 12 $\frac{3}{4}$ feet (maximum draught). Guns: 3—4·7 inch, 1—3 inch A.A., 3 M.G., 2 D.C. Throwers. Tubes: 6—21 inch, in triple deck mountings. Machinery: Geared turbines (Brown-Curtis h.p. and cruising, Parsons l.p.). Boilers: 3 Thornycroft. S.H.P. 28,000 = 35 kts. Oil fuel: 320 tons. 2 screws. Provision made for carrying mines. Complement, 130.

Notes.—These destroyers will have exceptionally good accommodation for vessels of their size, and are adapted for service in a wide range of climates. The contract, amounting to about £1,750,000, was awarded to Messrs. Thornycroft after intensive competition with many other yards British and Foreign. It is the largest foreign naval contract placed with a British yard since the War. These vessels are named after naval officers who distinguished themselves at the battle of Iquique. Plating is galvanised throughout, and the heavy hull scantlings reduce the stresses to even less than those allowed by British Admiralty practice. All this class have exceeded their contract speed on trials.

5 Almirante Class.

ALM. WILLIAMS.

1923 Photo, Abrahams.

(Uribe has upper bridge of same width as lower, and has paravane fitting forward.)

3 White: *Almirante Williams* (ex British *Botha*; ex Chilean *Almirante Williams Rebolledo*, 1911), 1742 tons; *Almirante Uribe* (ex British *Broke*; ex Chilean *Almirante Goni*, 1913), 1704 tons; *Almirante Riveros* (ex British *Faulknor*; ex Chilean *Almirante Simpson*, 1913), 1694 tons. Dimensions: 331 $\frac{1}{2}$ \times 32 $\frac{1}{2}$ \times 11 ft. 7 in. Armament: 2—4·7 inch*, 2—4 inch*, 2—2 pdr. pom-poms. 4—21 inch tubes.† Designed H.P. 30,000=31 kts. in *Almirante Williams*, = 32 kts. in *Almirante Uribe* and *Almirante Riveros*. Machinery: Turbines. Boilers: White-Forster. 3 screws. Fuel: (max.) 403 coal + 83 oil. Complement, 205.

Note.—Another of the class, British *Tipperary*, ex Chilean *Almirante Riveros*, sunk in Battle of Jutland. The above three boats purchased August, 1914, on outbreak of war, from Chile. Re-armed by British Navy 1918-19, and re-purchased by Chile, April, 1920.

*Possibly controlled by British Navy type Light Directors.

†Tubes mounted in pairs in *Almirante Riveros*; singly mounted in *Almirante Uribe* and *Almirante Williams*.

*ALM. CONDELL (centre), AL. LYNCH (behind).

Copyright photo, G. Allan, Valparaiso.

(Now have shorter mainmast than shown above.)

2 White: *Almirante Lynch* (1912), *Al. Conde* (1913). Dimensions: 320 \times 32 $\frac{1}{2}$ \times 11 feet. Normal displacement: 1730 tons. Full load: 1850 tons. Armament: 6—4 inch, 4 M.G., 6—18 inch tubes. Designed H.P. 30,000=31 kts. Turbines: Parsons. Boilers: White-Forster. 3 screws. Fuel: 427 tons coal + 80 tons oil = 2750 miles at 15 kts. Trials: *Al. Lynch*, 31·8 kts. (6 hours); *Al. Conde*, 33·4 kts. Complement 160.

*Note to Illustrations.—Fore funnels of *Lynch* and *Conde* now raised. All these vessels now have first letter of name painted on bow for identification purposes, e.g., W = *Williams*, L = *Lynch*, etc.

Submarine Depot Ship.

Building.

ARAUCANO. Laid down by Vickers-Armstrongs, Ltd., at Barrow, 1st March, 1929. Displacement: 9000 tons. Dimensions: 390 × 55 × feet draught. Guns: 2—4.7 inch, 2— AA. S.H.P. 2500 = 13 kts. Machinery: Parsons geared turbines. 1 screw. Coal: 670 tons. Has accommodation for 585, including crews of attached submarines. To be completed March, 1930.

Oilers.

Building.

MAIPO, RANCAGUA. Laid down by Vickers-Armstrongs, Ltd., on the Tyne, March, 1929. Displacement: 7715 tons (3800 tons gross). Complement: 54. Dimensions: 365 × 49½ × 22½ feet draught. Guns: 2—4.7 inch. I.H.P. 4800 = 15 kts. Machinery: Triple expansion. 2 screws. 4 S.E. boilers. Oil fuel: 725 tons. To be completed by March, 1930.

Collier.

Photo wanted.

VALDIVIA. (Ostsee Werft, Stettin, 1927). 3000 tons deadweight. Complement, 45. Dimensions: 267 × 41 × 20 feet. H.P. = 11 kts. Machinery: Triple expansion. 1 screw. 2 cylindrical boilers. Oil fuel: 351 tons.

Note.—The following Steamers of the Compañía Sud Americana de Vapores may be used as Transports in case of war: *Teno, Aconcagua, Aysen, Huasco, Cachapoal, Imperial, Mapocho, Palena, Renaico* (at present laid up), *Maipo*. The same Company's sea-going tug *Mataquito*, is also held at the Government's disposal. The naval transport *Abtao* foundered in heavy weather, July, 1929.

Coastguard Vessels (*Escampavias*).

Note.—The following vessels are normally employed as Surveying Ships and Lighthouse Tenders but in the event of war they would be used as Mine Layers and Patrol Vessels.

MICALVI (ex-*Bostonlines*, ex-*Bragi*) (Ostsee Werft, Stettin, 1925). Displacement 850 tons. (612 tons gross). Dimensions: 181½ × 28½ × 11 feet. Triple expansion engines. I.H.P. 380 = 9.5 kts.

COLOCOLO (1919) and **LEUCOTON** (1919), both built by Sandvikens Skeppsdocka Co., Helsingfors; **ELICURA** (1919) and **OROMPELLO** (1919), both built by Maskin och Brobyggnads Co., Helsingfors. All four completed 1919. 530 tons. Length (o.a.), 172.6 feet. Beam, 24.6 feet. Maximum draught, 11 feet. Guns: 2—3 inch. I.H.P. 1400 = 14½ kts. speed. 2 sets triple expansion engines. 2 screws. Boilers: 3 cylindrical. Coal capacity: *Colocolo* and *Leucoton*, 56 tons; *Elicura* and *Orompello*, 65 tons. Complement, 42. Refitted by Messrs. J. Samuel White & Co., Cowes, 1920.

AGUILA (1906). 820 tons. Speed: 10 kts.

PORVENIR (1906). 450 tons. Speed: 8 kts.

YECHO (1906). 280 tons. Speed: 12 kts.

Tugs (*Remolcadores*).

Building.

BUZO SOBENES, CORNETA CABRALES (Bow, McLachlan & Co., Paisley, 1929). 350 tons gross. Complement, 27. Dimensions: 126 × 27 × 14 feet. Machinery: Triple expansion. 1 screw. H.P. 1050 = 12 kts. 2 cylindrical boilers. Coal: 50 tons.

PILOTO SIBBALD. (Bow, McLachlan & Co., Paisley, March, 1915.) 885 tons. Dimensions: 141½ × 29 × 16 feet. H.P. 1200 = 11.5 kts. Machinery: Triple expansion. 2 screws. 2 cylindrical boilers. Coal: 120 tons. Complement, 18. Carries 240 tons fresh water. Fitted as Fire Float and Salvage Vessel, with equipment of petrol-driven and electric submersible pumps. Served in British Navy during War as H.M.S. *Stoic*.

Note.—Old Ironclads, *Almirante Cochrane* (1874) and *Huascar* (1865), still exist at Talcahuano, being used as Depot Ships.

Officially revised at the Chinese Admiralty, Nanking, 1929, by courtesy of the Vice-Minister of the Navy, who has also furnished most of the photos dated 1929.

Uniforms.



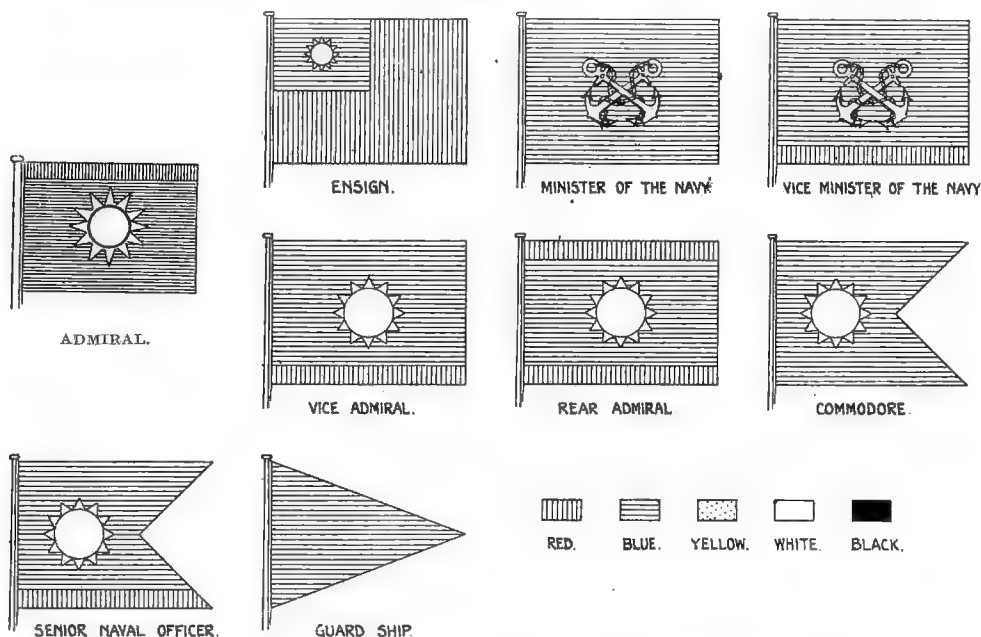
Admiral. Vice-Admiral. Rear-Admiral. Commodore. Captain. Commander. Lieutenant-Commander. Lieutenant. Sub-Lieutenant 1st Class. Sub-Lieutenant 2nd Class.

Colour between stripes:—*Engineers* (none); *Surgeons*, red; *Paymasters*, white; *Engine Constructor*, purple; *Ship Constructor*, drab grey or ash colour; *Navigating Officers*, light indigo blue. All these branches *without* the curl or emblem over top stripe.

Minister of the Navy:—Admiral Yan-Shu-Chuan. *Vice-Minister of the Navy*:—Vice-Admiral S. K. Chen.

Special Note.—In July, 1929, it was requested by the Chinese Government that the services of a British Naval Mission should be lent to reorganise the Fleet. A new programme comprising 3 Cruisers, 4 Destroyers, and 2 Submarines is proposed.

Flags.



Mercantile Marine.

(From "Lloyds Register" 1929 figures). Total Gross Tonnage, 319,224.

Note on Spelling of Chinese Warship Names.

The transliteration of Chinese names depends first upon the dialect in which the characters happen to be spelt, and secondly, on the system used by the foreigner to represent that dialect. The official dialect is Pekinese and a widely adopted system of representing it is that known as "Wade's Spelling." Accordingly, "Wade's Spelling" has been introduced, all aspirates, accents and tonic marks being omitted, though it has not been found possible to render all names given here by that method.

IDENTIFICATION SILHOUETTES. Scale: 1 inch = 160 feet.

RIVER GUNBOATS.



CHIENTHUNG class (3).

LI SUI.

KIANGHSI class (2).

LI CHIEH.



LIEN CHING.

KIANG HENG class (4 ships).

CHU TAI class (6 ships).



YING SWEI class (2 ships).

CHIENTHAI class (2 ships).



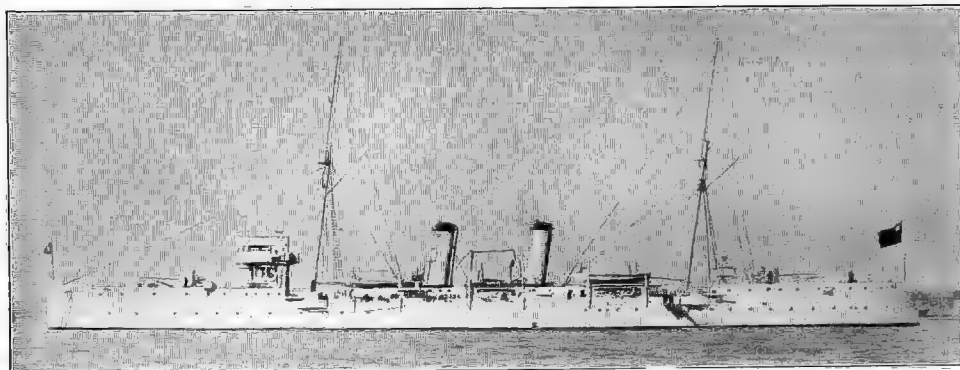
HAI YUNG class (3 ships).



HAI CHI.

FET YING.

1910 Protected Cruisers.



YING SWEI.

YING SWEI (July, 1911) & **CHAO HO** (Oct., 1911).

Normal displacement, 2460 tons; full load { *Ying Swee*: 2,750 tons. } Complement, 334.
Chao Ho: 2,600 tons. }

Ying Swee: Length (*p.p.*), 330 feet, (*o.a.*) 346 feet. Beam, 39½ feet. Max. load draught, 14 feet 11 ins.
Chao Ho: " 320 " " 39 " " 14 "

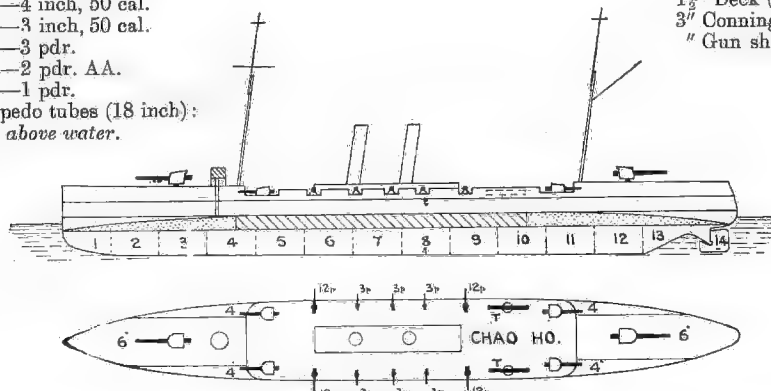
Guns (*see Notes*):
 2—6 inch, 50 cal.
 4—4 inch, 50 cal.
 2—3 inch, 50 cal.
 6—3 pdr.
 2—2 pdr. AA.
 2—1 pdr.

Torpedo tubes (18 inch):
 2 above water.

Armour:

3" Deck (amidships)
 1½" Deck (ends) ...
 3" Conning tower
 " Gun shields.....

Ahead:
 1—6 in.
 2—4 in.



Astern:
 1—6 in.
 2—4 in.

Broadside: 2—6 in., 2—4 in.

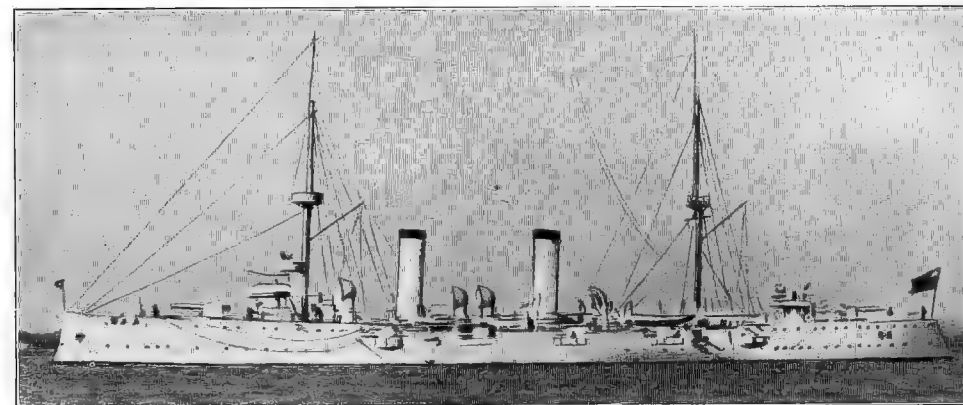
Machinery: Parsons turbine. Boilers: *see notes*. 4 screws. Designed H.P. 6000 = 20 kts. Coal: normal: 220 tons; maximum: 550 tons. Oil: 50 tons in *Ying Swee*, 100 tons in *Chao Ho*. Endurance: about 4500—5000 miles at 10 kts., and about 2900 miles at 18 kts.

Gunnery Notes.—Vickers models in *Ying Swee*; Armstrong in *Chao Ho*.

General Note:—Both ships employed as seagoing training vessels.

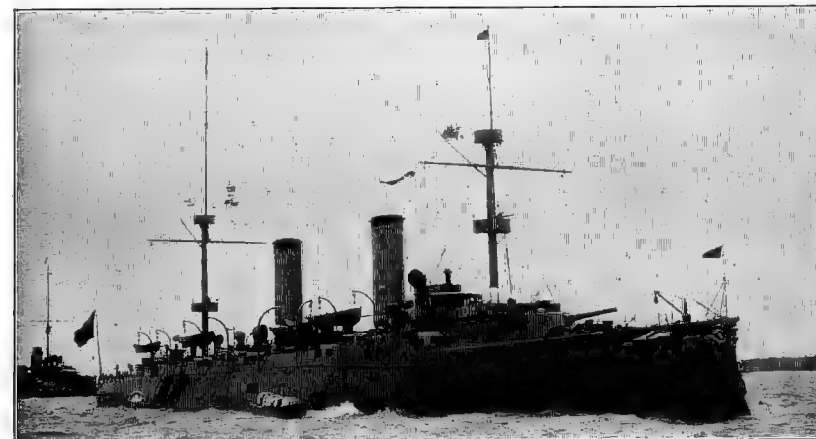
Name	Builder	Machinery	Laid down	Completed	Trials (light)	Full power	Boilers
<i>Ying Swee</i>	Vickers	Vickers	1910	1912	5394=20.7	8797=22.23	White-F. + cyl.
<i>Chao Ho</i>	Armstrong	Hawthorn	1910	1912	...	8622=22.12	6 Yarrow

1897-8 Protected Cruisers.



1929 Official Photo.

HAI YUNG (1897), **HAI CHOU** (1897) and **HAI SHEN** (1898). Displacement, 2950 metric tons. Complement, 326-343. Length (*p.p.*) 314 feet, (*o.a.*) 328 feet. Beam, 40½ feet. Maximum draught, 19 feet. Guns (Krupp): 2—6 inch, 40 cal., 8—4.1 inch, 40 cal., 4—3 pdr., 4—1 pdr., 1—2 pdr. AA. Torpedo tubes (14 inch): 1 bow (submerged). Armour: 2½" Deck (amidships), 1½" deck (ends), 2" gun shields, 1½" conning tower. Designed H.P. 7,500 = 19 kts. 8 cylindrical boilers. Coal: normal 200-220 tons; maximum 500-580 tons. All three ships built by Vulkan Co., Stettin. Speed now reduced to 10 knots or less in all except *Hai Chou*, refitted 1928.

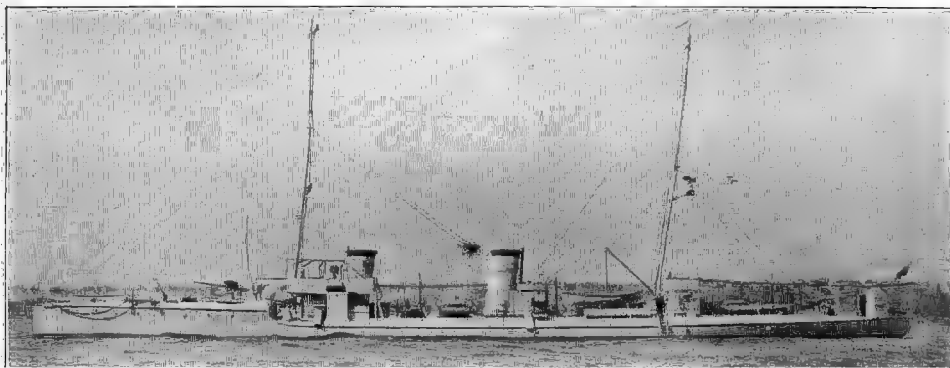


Photo, Symonds & Co.

HAI CHI (Armstrong, 1898). Displacement, 4,300 tons. Complement, 431. Length (*p.p.*), 424 feet. Beam, 46½ feet. Mean draught, 16½ feet; max. 19 feet. Guns (Armstrong): 2—8 inch, 45 cal., 10—4.7 inch, 45 cal., 12—3 pdr., 4—1 pdr., 6 machine. Torpedo tubes (18 inch): 5 above water. Armour (Harvey): 5" Deck (amidships), 1½" deck (ends), 4½" gun shields, 4" ammunition hoists, 6" conning tower. Designed H.P.: 17,000 (*f.d.*) = 24 kts. Boilers: 12 cylindrical. Coal: normal 400 tons, maximum 990 tons. (Refitted, 1927).

Destroyers.

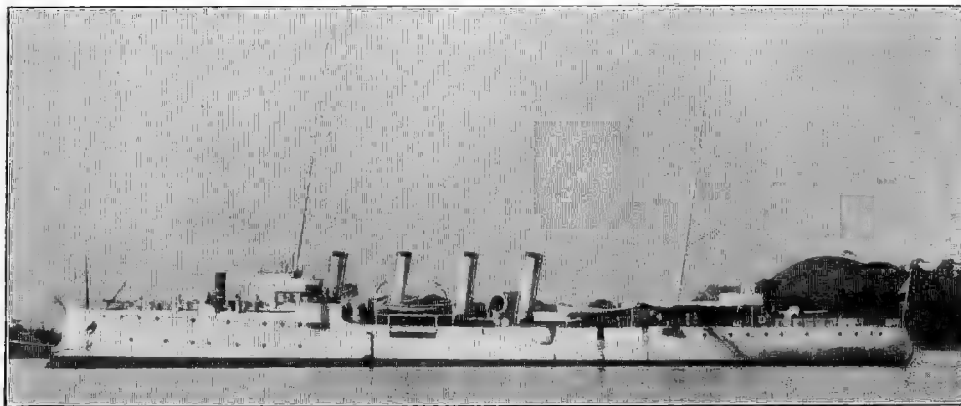
All Photographs below furnished 1929 by courtesy of Vice-Minister of the Navy.



1929 Official Photo.

3 Schichau type: **Chien Kang, Tung An, Yu Chang** (—1912), 390 tons. Dimensions: 198 (p.p.), 208 (o.a.) × 21½ × 10 feet. Armament: 2—3 inch, 4—3 pdr., 2—18 inch tubes. Designed H.P. 6000=32 kts. Coal, 80 tons. Complement, 83.

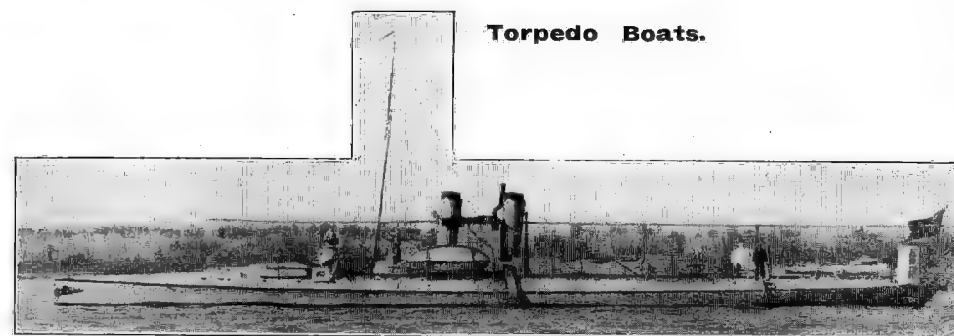
First called *Fu Po*, *Fei Hung* and *Chang Feng* but names were altered by Yuan Shih Kai.



1929 Official Photo.

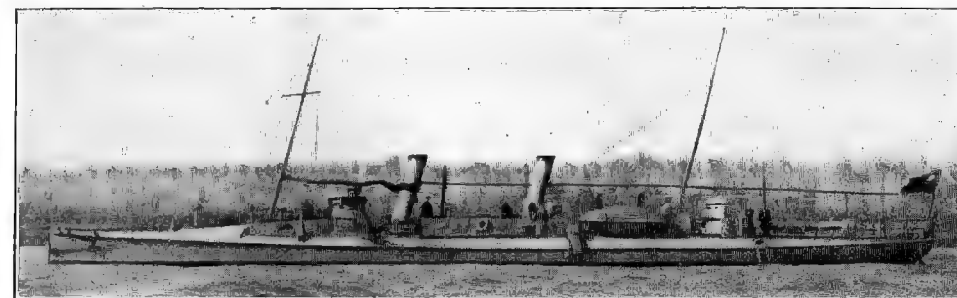
Fei Ying (July, 1895). Displacement, 850 tons. Dimensions: 210 × 30 × 11 feet. Complement, 145. Guns (Krupp): 2—4½ inch, 6—3 pdr., 4 M.G., 3 tubes (1 bow, 2 broadside, above water. Designed H.P. 5500=22 kts. Boilers: Yarrow. Coal: 170 tons. Built at Stettin, and originally classed as a Torpedo Gunboat.

Torpedo Boats.



1929 Official Photo.

4 Kawasaki-Normand type: **Hu Peng** or **No. 7**, **Hu Oah** or **No. 8**, **Hu Ying** or **No. 9**, **Hu Chun** or **No. 10** (Kobe, Japan, 1907-8). 96 tons. Dimensions: 135 × 15½ × 7½ feet. Armament: 1—3 pdr., 1—1 pdr., 3—14 inch tubes (1 bow above water and 2 deck). Designed H.P. 1200=23 kts. Coal, 28 tons normal. Complement: 41. Some can only do about 13 kts. now.



1929 Official Photo.

2 Vulcan type: **Su*** or **No. 4**, **Chen*** or **No. 2** (1895). 90 tons. 144 × 17 × 8 feet. Armament: **Su**, 3—1 pdr.; **Chen**, 2—1 pdr.; both 2 M.G. and 2—14 inch torpedo tubes. H.P. 700 = 18 kts. (now reduced to 10 kts.). Complement, 40.

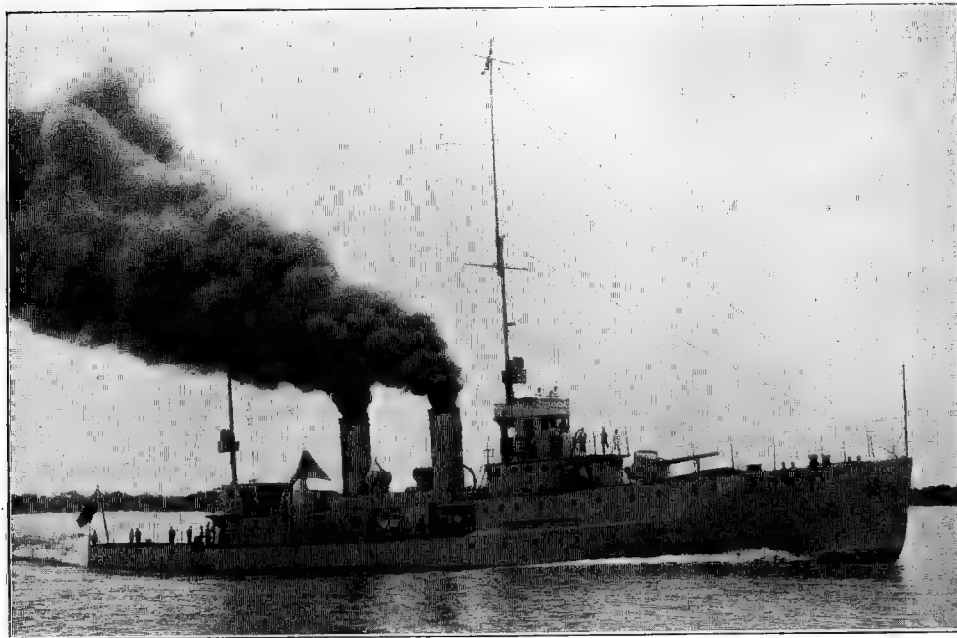
* These two T.R. sometimes have suffix *Ting* (Boat) or *Tzu* (meaningless) added to their names.

2 Schichau type: **Lieh*** or **No. 3** (1897), **Chang*** or **No. 1** (1895). 62 tons. 130 × 16 × 7 feet. Armament: 2—1 pdr., 2 M.G., 3—14 inch torpedo tubes. H.P. 600=16 kts. (now about 14 kts.) Complement 40.

* These two T.B. sometimes have suffix *Ting* (Boat) or *Tzu* (meaningless) added to their names.



1929 Official Photo.

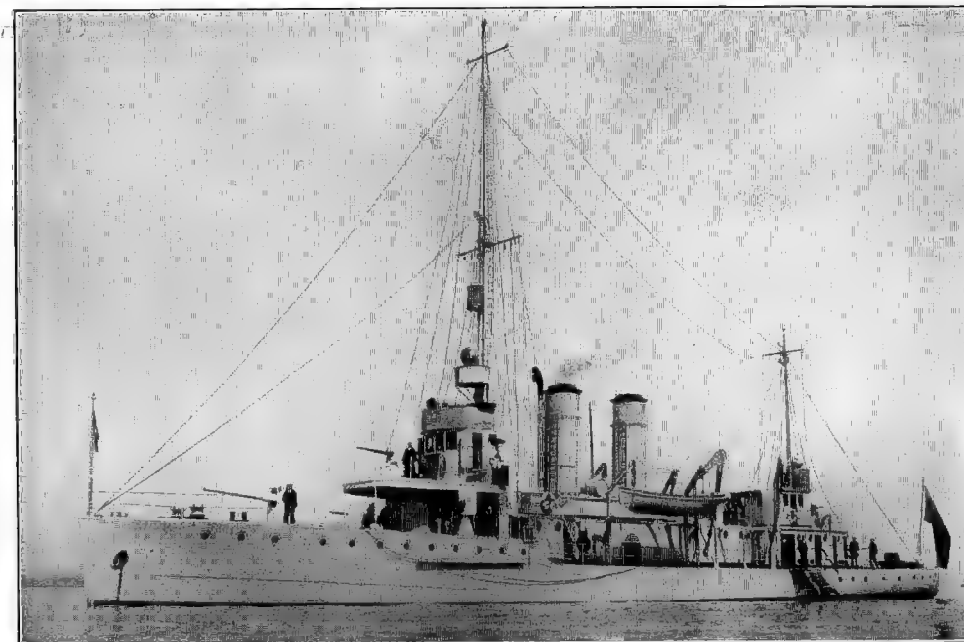


1929 Official Photo.

YUNG SUI (1929). Built by Kiangnan Dock Co., Shanghai. Displacement, 650 tons. Complement, 100. Dimensions: 225 × 30 × 6 feet. H.P. 4000 = 18.5 kts. Guns: 1—6 inch, 1—4.7 inch, 3—3 inch AA., 4—6 pdr., 1—1 pdr. Pom-pom, 4 M.G.

(Of similar appearance to *Yung Sui*.)

MING CHUN (1929). Displacement, 450 tons. Complement, 100. Dimensions: 196½ × 26 × 6 feet (mean). H.P. 2400 = 16.75 kts. Guns: 1—4.7 inch, 1—4 inch, 1—3 inch, 2—6 pdr., 1—1 pdr. pom-pom, 4 M.G.



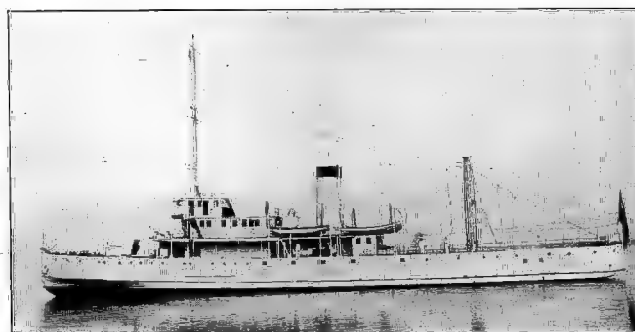
1929 Official Photo.

HSIEN NIN (Kiangnan Dock Co., Shanghai, Aug. 16, 1928). Displacement, 418 tons. Complement, 115. Dimensions: 170 (p.p.), 180 (o.a.) × 24 × 6½ feet. H.P. 2500 = 17 kts. Guns: 1—4.7 inch, 1—4 inch, 3—6 pdr., 5 M.G. Cost: \$300,000.



1929 Official Photo.

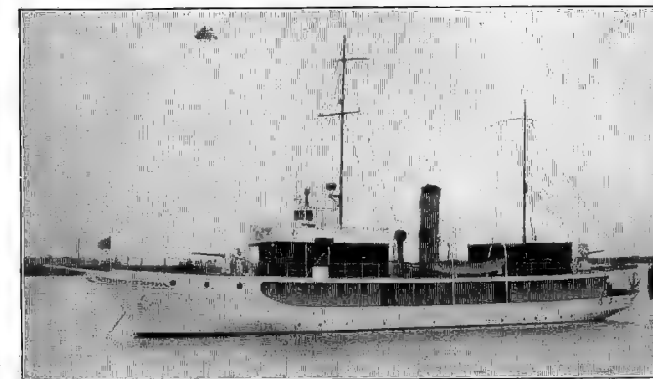
YUNG SHENG (1928). Normal displacement, 300 tons. Complement, 42. Dimensions: 125 × 21 × 7 feet. H.P. 500 = 10 kts. Guns: 1—3 inch, 1—6 pdr., 2 M.G.



1929 Official Photo.

WEI SHENG, TEH SHENG (1922). Displacement, 932 tons. Complement, 93. Dimensions: 205½ × 31 × 8 feet. H.P. 3300 = 15 kts. Guns: 1—4.7 inch, 1—3 inch, 2—6 pdr.

Note.—*Wei Sheng* is reported to have been converted into an Aircraft Tender 1929.



1929 Official Photo.

KUNG SHENG (1922). Normal displacement, 279 tons. Complement, 53. Dimensions: 145 × 20½ × 7 feet. H.P. 200 = 8.5 kts. Guns: 1—3 inch, 1—6 pdr., 2 M.G.



YUNG CHIEN.

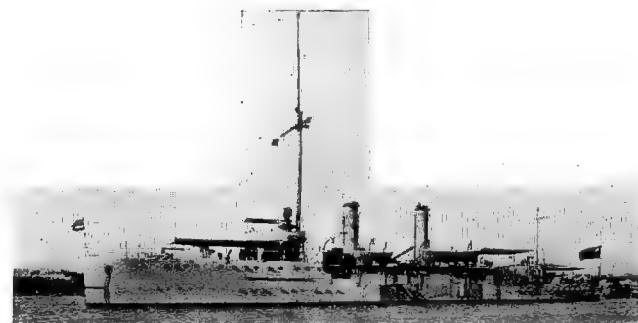
1929 Official Photo.



YUNG CHI.

1929 Photo.

YUNG CHIEN, YUNG CHI (Built 1915, by Kiangnan Dock Co., Shanghai). 860 tons. Dimensions: 205 (*p.p.*), 215½ (*o.a.*) × 29½ × 11½ feet. Guns: 1—4 inch, 1—3 inch, 4—3 pdr., 2—1 pdr., 1—2 pdr. AA. Designed H.P. 1350 = 13 kts. Coal: 150 tons. Complement, 105.



YUNG-FENG.

1921 Photo, Rear-Admiral Ngen-Tao.



YUNG HSIANG.

1928 Photo.

YUNG FENG, YUNG HSIANG (Kawasaki Co., Kobé, Japan, 1912—13). 830 tons. Dimensions: 205 (*p.p.*) × 29½ × 8 feet. Guns: 1—4.1 inch, 1—3 inch, 4—3 pdr., 2—1 pdr. H.P. 1350 = 13.5 kts. Coal: 190 tons. 2 screws. Complement, 105. 1 inch steel protective deck.



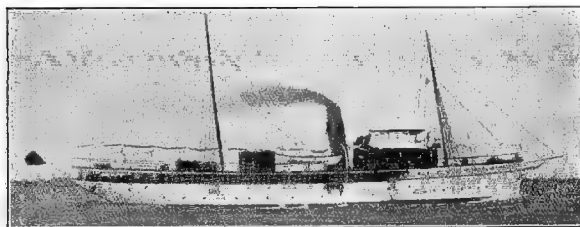
1921 Photo, Rear-Admiral Ngen Tao.

WU FENG (Tsingtao, 1912). 200 tons. Dimensions: 124 × 20 × 7 feet. H.P. 300 = 10 kts. Guns: 4—3 pdr. Complement, 46.



1929 Official Photo.

YE SHENG (1911). Displacement, 350 tons. Complement, 37. Dimensions: 120½ × 20½ × 11 ft. H.P. 500 = 10 kts. Guns: 1—9 pdr., 1—6 pdr., 2 M.G.

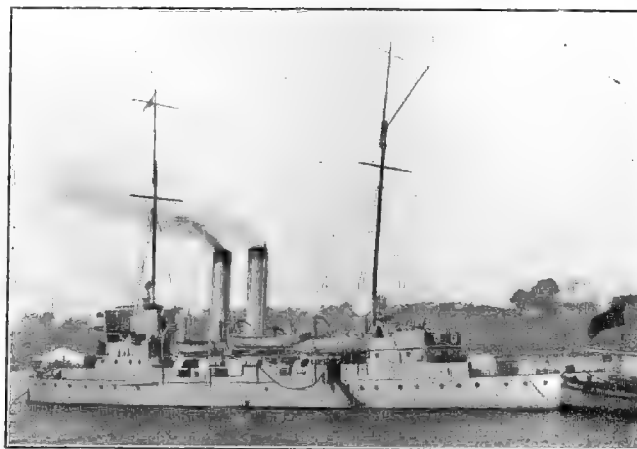


LIEN CHING (Shanghai, 1910). 500 tons. Dimensions: 150 (p.p.), 173 (o.a.) × 25 × 10 feet (mean). I.H.P. 800 = 12 kts. Cylindrical boilers fitted with Howden's f.d. Coal: 95 tons. Guns: 4—3 pdr., 2 M.G. Complement, 91.



CHU YUNG.

1929 Official Photo.



CHU KUAN.

1929 Photo.



CHU YEW.

CHU CHIEN.
CHU KUAN.

CHU TAI.
CHU TUNG.

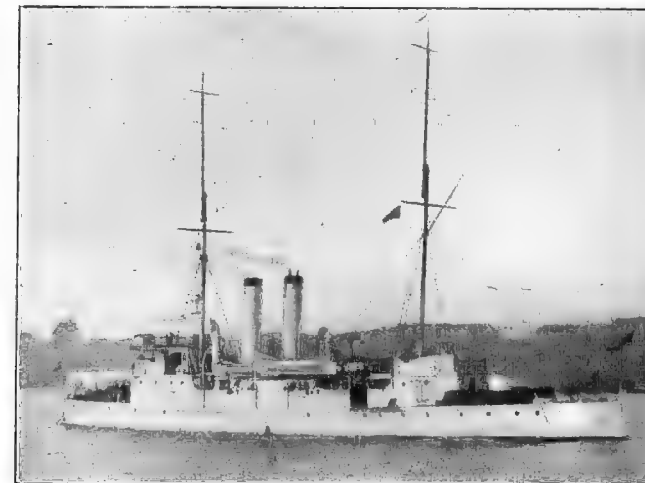
CHU YU.
CHU YEW.

(For description see next column.)

1929 Official Photo.

All built by Kawasaki Yard, Kobé, 1906-07. 740 tons. (*Chu Yew*, 745 tons.) Complement, 123-135. Dimensions: 200 × 30 × 8 feet. Armament: 2—4.7 inch, 2—3 inch, 3—6 pdr., 1—2 pdr. AA., 2 M.G. (*Chu Yew* has 5—9 pdr., 4—1 pdr., 1—1 pdr. AA. in place of latter 3 items.) Machinery: 2 sets vertical triple expansion. 2 screws. Boilers: Water-tube. Designed H.P. 1350 = 11 kts. (*Chu Yew*, 12 kts.). Coal: 150 tons.

Note.—Several of these vessels have been fitted with additional protection for gun crews. Speed in some cases is only about 9 kts now.



KIANG CHEN.

1929 Photo.



KIANG YUAN.

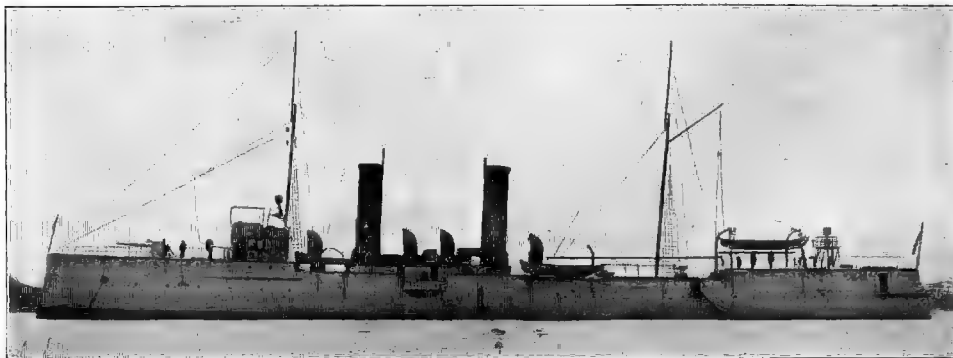
1929 Official Photo.

KIANG CHEN
KIANG HENG

KIANG LI
KIANG YUAN

All built by Kawasaki Yard, Kobé, 1906-07. 550 tons. Complement, 106-123. Dimensions: 170 (p.p.), 180 (o.a.) × 28 × 7 feet. Armament: 1—4.7 inch (bow), 1—3 inch (aft), 4—3 pdr., 4—Maxims. Machinery: 2 sets vertical triple expansion. 2 screws. Boilers: Water-tube. Designed H.P. 950 = 13 kts. (reduced to 10 kts. in some). Coal: 113 tons.

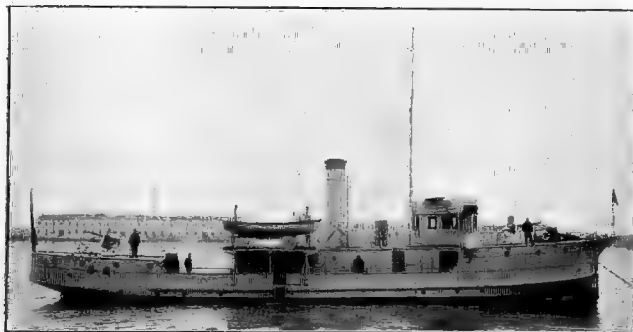
Gunboats.—continued.



CHIEN AN.

1929 Official Photo.

CHIEN WEI (1902) and **CHIEN AN** (1900). Displacement, 871 tons. Dimensions: $251 \times 26\frac{1}{2} \times 12$ feet. Complement, 136. Guns: 1—4.1 inch, 3—9 pdr., 6—1 pdr. Torpedo tubes: 2 above water (may have been removed). Armour: 1" belt and deck (amidships). Designed H.P. 6500 = 23 kts. (about 18 now). 2 screws. Coal: 180 tons. Built at Fu-Chau under direction of M. Doyère, who was responsible for design. Engines built by F. & Ch. de la Méditerranée, Le Havre. Guns are Schneider-Canet.



1929 Official Photo.

CHEN SHENG (1899). Displacement, 275 tons. Complement, 42. Dimensions: $120 \times 20 \times 7$ feet. H.P. 400 = 10 kts. Guns: 1—6 pdr., 1—3 pdr., 2 M.G.



Photo added 1927

CHE-TIEN (ex-Delta, Armstrong, 1877) Iron "Rendel" gunboat. 420 tons. Dimensions: $120 \times 30 \times 8$ feet. Guns: Not known. H.P. 270 = 9.5 kts. 2 screws. Coal: 50 tons. (Used as examination vessel at Wusung)

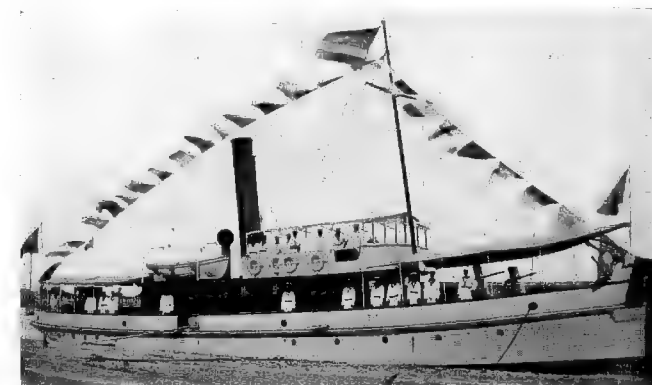
River Gunboats.

Photo wanted.

KIEN YU (1929). Built by Bailey & Co., Hongkong. Displacement, 200 tons. Dimensions: 118 (p.p.), 121 (o.a.) $\times 21\frac{1}{2} \times 4\frac{1}{2}$ feet. 2 screws.

Photo wanted.

CHUNG KAI, CHUNG YUEN Built 1928 by Messrs. Bailey & Co., Hongkong. Displacement, 50 tons. Dimensions: $84 \times 15 \times 2\frac{1}{2}$ feet. 2 screws. Speed: 15 kts.



1921 Photo, Rear-Admiral Ngen Tao.

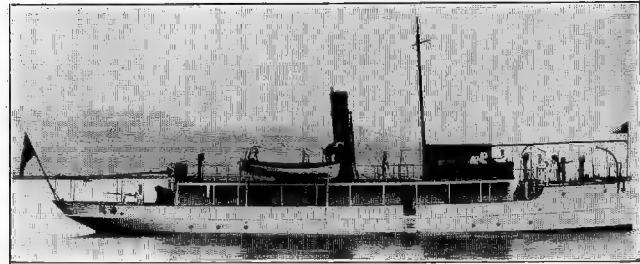
HAI BUNG (1920), built by Taikoo D.Y. Co. Shallow-draught Gunboat of 227 tons. Dimensions: $108 \times 18 \times 6\frac{1}{2}$ feet. Guns: 4—1 pdr., 2 Machine. H.P. 200 = 12 kts. Oil fuel: 20 tons. Complement, 22.

* Chinese characters not being available, this name cannot be spelt in accordance with "Wade's System." It has also been translated as HAI P'ENG (Mandarin) or HOI PANG (Cantonese). This gunboat is normally stationed at Canton.



HAI KU.

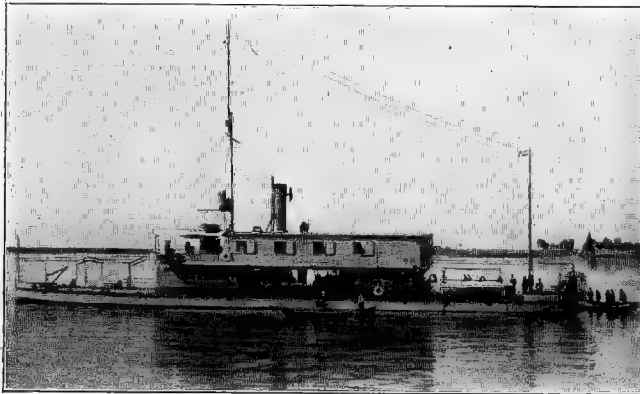
1929 Official Photo.



HAI HUNG.

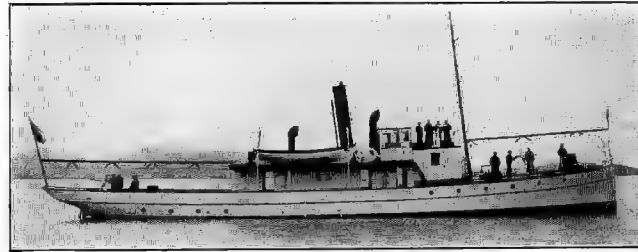
1929 Photo.

HAI KU (1919), **HAI HUNG** (1916-17), both built by Fu-Chau Dockyard. Shallow-draught Gunboats of 190 tons. Dimensions: $112 \times 18 \times 8\frac{1}{2}$ feet. Guns: 2 2 pdr., 2 machine. H.P. 300 = 9 kts. Oil fuel: 20 tons. Complement, 35-31.



1929 Photo.

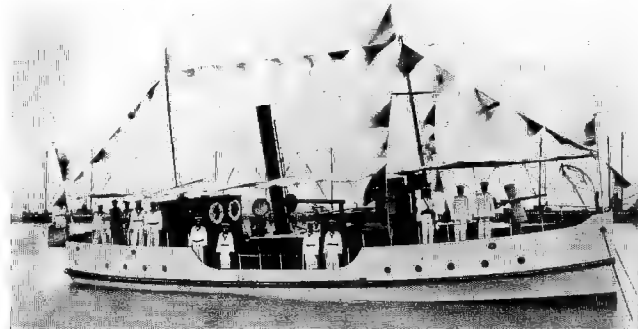
KIANG KUN (Vulkan, 1912). Displacement, 140 tons. Dimensions: $146 (p.p.) \times 26 \times 2$ feet. H.P. 500 = 10 kts. Boilers: 2 Schulz. Coal: 30 tons. Guns: 1-3.4 (22 pdr.) howitzer, 1-1 pdr., 4 M.G. Complement, 48.



HAI FU.

1929 Official Photo.

HAI OU, HAI FU (both built by Kiangnan Dock Co., Shanghai, 1916-17). 150 tons. Dimensions: $105 (p.p.), 109 (o.a.) \times 17 \times 7\frac{1}{2}$ feet. Guns: 2-1 pdr., 2 machine. H.P. 250 = 9.5 kts. speed (now about 7.5 kts.). Oil fuel: 35 tons. Complement 35.

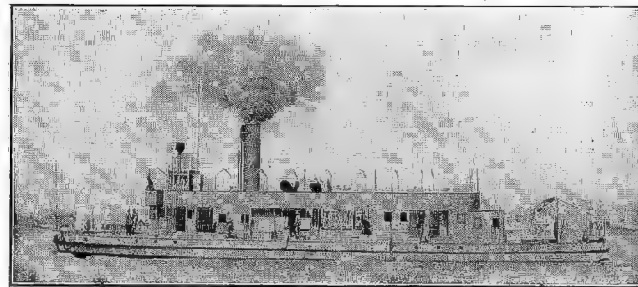


HAI YEN.

1921 Photo, Rear-Admiral Ngen Tao.

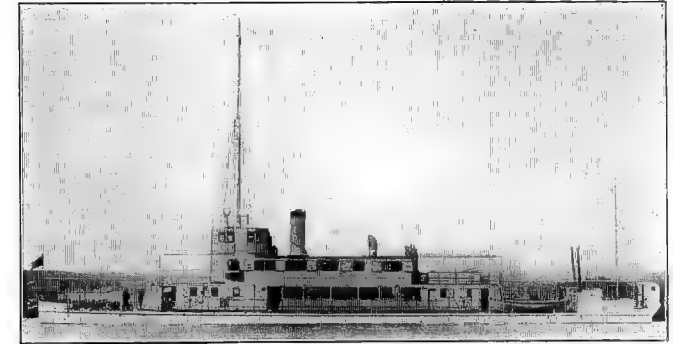
HAI YEN. Built by Taikoo D.Y. Co., Hong Kong, 1916-17. 56 tons. Dimensions: $65 \times 12 \times 2.6$ feet. Guns: 1-1 pdr., 4 machine. H.P. 120 = 10 kts. speed. Oil fuel: 8 tons. Complement, —.

Note.—This vessel lies at Canton, and was last reported badly in need of overhaul and refit (1926).



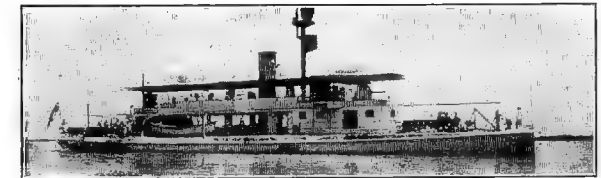
CHIEN CHUNG (June, 1915). **YUNG AN** (1915). **KUNG CHEN** (1915).

All built by Yangtse Works, Hankow. 90 tons. Dimensions: $110 \times 18\frac{1}{2} \times 3$ feet. H.P. 450 = 11 kts., but *Chien-Chung* made 13 kts. on trials in 1915. Guns: 1-3.4 inch howitzer. 4 M.G. Complement, 42.

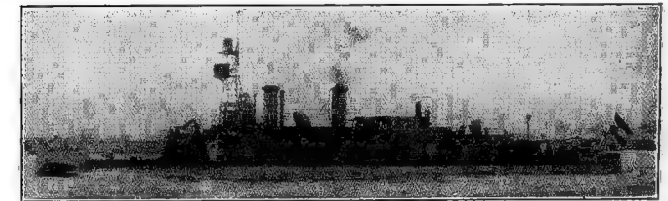


1929 Official Photo.

KIANG HSI (Krupp, 1911). Displacement: 150 tons. Dimensions: $144 \times 25 \times 3$ feet. H.P. 450 = 9 kts. Boilers: 2 Schulz. Coal: 35 tons. Guns: 1-3.4 inch howitzer, 1-1 pdr., 4 M.G. Complement, 58.



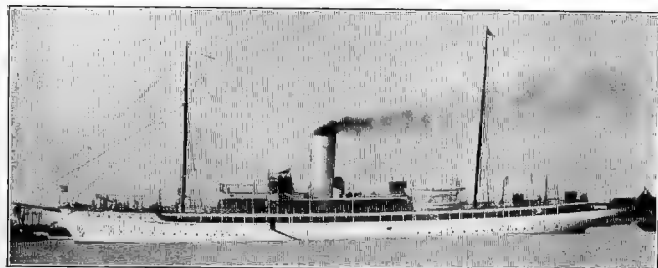
LI CHIEH (ex-German *Otter*, Tecklenborg, 1909. Interned in China, 1914, and taken over for Chinese Navy about 1917). 266 tons. Dimensions: $177.6 \times 26.7 \times 2.7$ feet. Guns: 2-6 pdr., 3 M.G. Armour: 2" on waterline, 2" C.T. I.H.P. 1300 = 14 kts. Boilers: 4 Schulz. Coal: 95 tons. Complement, 45.



LI SUI (ex-German *Vaterland*, Elbing, 1903. Interned at Nankin, August, 1914, and taken over for Chinese Navy, 1917). 170 tons. Dimensions: $158 \times 26.3 \times 2$ feet. Guns: 1-3.4 inch (22 pdr.) howitzer, 1-4 pdr., 2 M.G. I.H.P. 1300 = 13 kts. Boilers: 2 Schulz. Coal: 75 tons. Complement, 45.

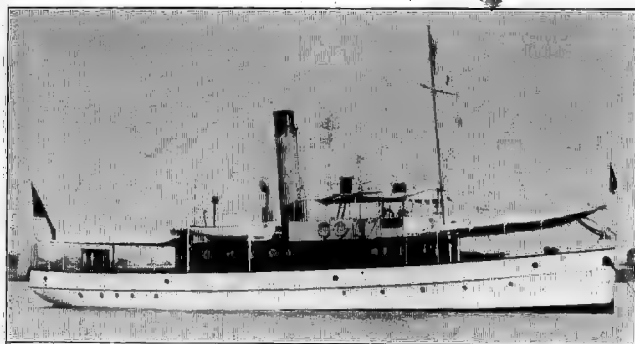
CHINA—Surveying Vessels and Transports.

Surveying Vessels.



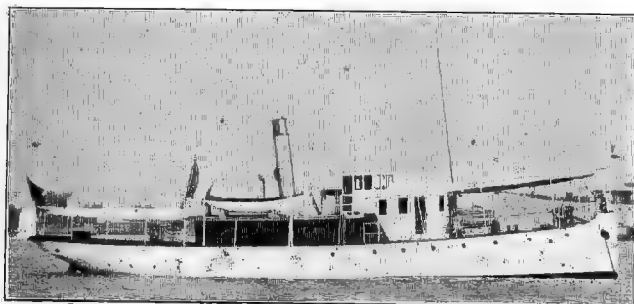
KAN LU. No particulars available.

1929 Official Photo.



KING SING. No particulars available.

1929 Official Photo.

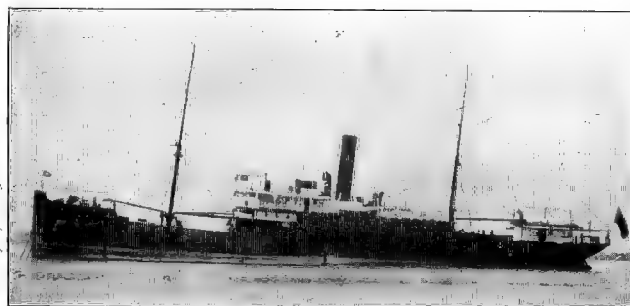


CHIN YUEN (1872). Displacement, 587 tons. Dimensions : 160 × 26 × 10 feet. H.P. 480 = 10 kts. Guns : Not known. Complement, 118.

1929 Official Photo.

SURVEYING VESSELS AND TRANSPORTS.

Transports.



1929 Official Photo.

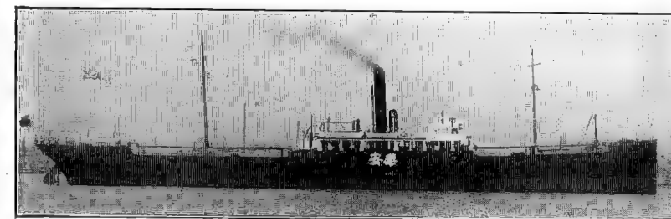
CHING AN (1906). Displacement, 4000 tons. Dimensions : 272 × 40 × 17½ feet. H.P. 1160 = 11 kts. Guns : 2—6 pdr. Complement, 235.



1929 Official Photo.

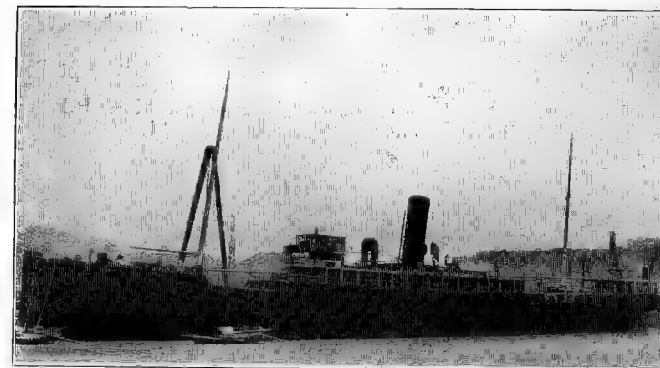
TIN AN (1901). Displacement, 2011 tons. Dimensions : 230 × 33 × 18 feet. H.P. 918 = 11 kts. Complement, 70.

Transports—continued.



1929 Official Photo.

HWA AN (1899). Displacement, 10,573 tons. Dimensions : 414 × 46 × 24½ feet. H.P. 5000 = 11 kts. Guns : 2—3 pdr. Complement, 136.

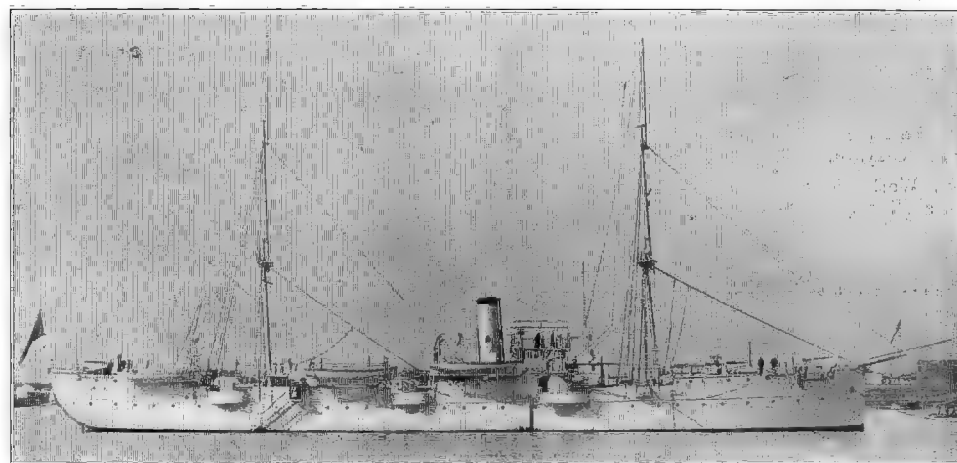


1929 Official Photo.

PU AN (1896). Displacement, 4600 tons. Dimensions : 393 × 45 × 25 feet. H.P. 6500 = 15 kts. Guns : 1—3 inch. Complement, 137.

TRAINING SHIPS AND MISCELLANEOUS VESSELS.

Training Ships.



1929 Official Photo.

TUNG CHI (1895). Steel. 1900 tons. Dimensions: 252 × 34 × 16 feet. Guns: 2—6 inch, 5—4 inch, 3—6 pdr., 8—1 pdr. H.P. 1600 = 10.5 kts. 1 screw. Complement, 335. Built as a cruiser at Foochow, 1892-96, and later appropriated for training purposes.



FU AN.

1929 Official Photo.

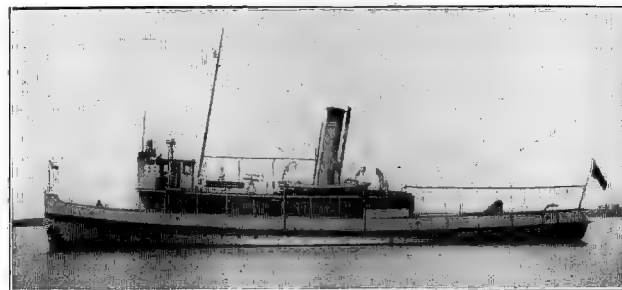
FU AN. Built by Fu-Chau D.Y., 1894. Displacement 1700 tons. Dimensions: 250 × 38 × 18 feet. Guns: 2—6 pdr., 2—1 pdr. I.H.P. 1600 = 10 kts. speed. Coal: 170 tons. Complement, 105.

Tugs.



1929 Official Photo.

FU TING (1928). Displacement, 150 tons. Dimensions: 87½ × 16½ × 8 feet. H.P. 300 = 10 kts. Complement, 25.



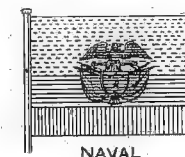
1929 Official Photo.

LI TUNG (1923). Displacement, 200 tons. Dimensions: 117 × 21½ × 11 feet. H.P. 500 = 7 kts. Guns: 2 M.G. Complement, 34.

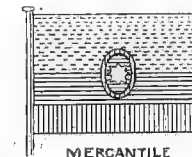
Training Ships and Miscellaneous Vessels—CHINA

COLOMBIA




COLOMBIA.



NAVAL



MERCANTILE

Red 
White 
Blue 
Yellow 

Gunboat.

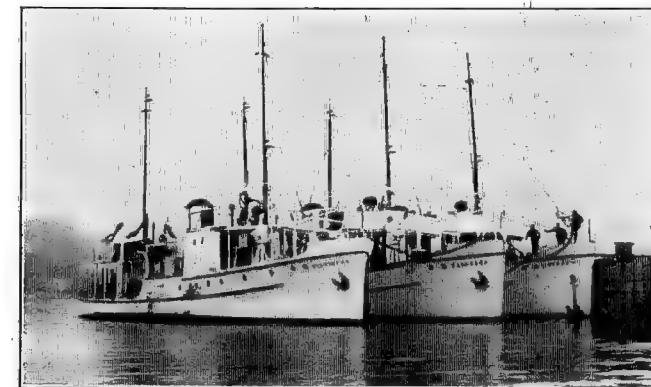
CHERCINTO (1896). 643 tons. Dimensions: 185 (p.p.) × 31 × 12 feet. Guns: not known. Designed H.P. 400 = about 12 kts.

River Gunboats.

3 River Gunboats were ordered from Messrs. Yarrow & Co., Ltd., in August, 1929. Length, 140 feet. Draught, 2½ feet. To be equipped with internal combustion engines, giving a speed of 13.5 kts.

ESPERANZA (1897), **GENERAL NERINO** (1895), both built at Perth Amboy, U.S.A. Stern-wheelers of 400 tons. Dimensions: 140 (p.p.) × 9 × 3 feet. Guns: 3 M.G. Designed H.P. 430 = 15 kts. No other details known.

Coastguard Patrol Vessels.



PICHINCHA, CARABOBO, BOYACA.

1927 Builders' Photo, by courtesy of M. Le Masson.

BOYACA (July 8th, 1925), **CARABOBO** (August 8th, 1925), **PICHINCHA** (Sept. 5th, 1925). All built by Soc. Anon. des Chantiers et Ateliers de St. Nazaire (Penhoët), at Rouen. Dimensions: 100 × 20 × 8½ feet. Triple expansion engines and oil-burning water-tube boilers by Messrs. Thornycroft. Speed: 13 kts.

M. L. (Motor Launches).

Cauca (1913). 50 tons. Dimensions: 110 × 17 × 4 feet. Guns: Not known. Speed, 12 kts.

Guarda Costas 1, 2, 3, 4 (Yarrow, 1913). 20 tons. Dimensions: 80 × 12½ × 3½ feet. Guns: 1—1 pdr. H.P. 160 = 12 kts. Fuel: 1800 galls. petrol = 2400 miles at 10 kts.

Old Transport *Bogota* is still in service.

Revised 1927 by courtesy of Capitan de Navio Julio Morales Coello, Naval Aide to H.E. the President of the Republic, Havana.

A Government dockyard is projected in Havana Bay, near the Tiscornia. To have a 4000 ton Floating Dock. Naval Academy at Mariel to be transferred to vicinity of Dockyard.

Private Docks: At Havana, private floating dock (U.S. and Cuban Allied Works Engineering Corp.) 360×66×17½ feet (5600 tons); also Havana Marine Co. has a slipway 3,000 tons capacity.

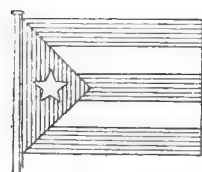
Minister of War and Navy: Dr. Rafael Hurralde.

Personnel: Officers, Line 65; Engineers 49, Paymasters 8, Surgeons 8, Judge-Advocates 2=132. Men 1050.

Mercantile Marine.

(From "Lloyd's Register" 1929 figures.) Total gross tonnage, 45,270.

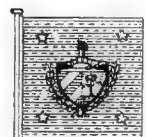
Flags.



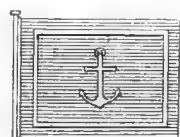
ENSIGN.

RED.

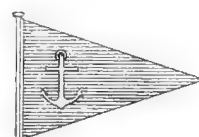
SKY BLUE.



PRESIDENT'S FLAG



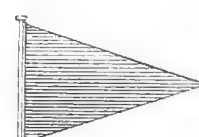
SECRETARY OF WAR AND NAVY



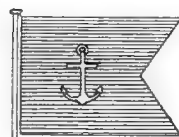
COMMANDERS OF NAVAL DIVISIONS WHEN OF RANK HIGHER THAN LIEUT. COMD



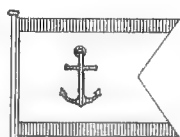
COMMANDERS OF NAVAL DIVISIONS WHEN OF RANK LIEUT. COMD AND BELOW



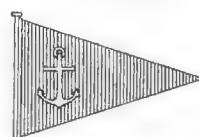
SENIOR OFFICER'S FLAG



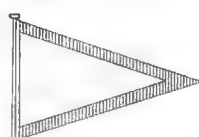
CHIEF OF NAVAL STAFF



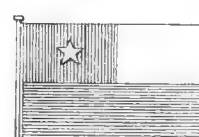
COMMANDER OF NAVAL DISTRICTS



DIVISIONAL COMMANDERS 2ND IN COMMAND WHEN OF RANK HIGHER THAN LIEUT. COMD



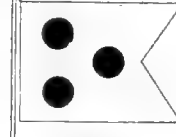
DIVISIONAL COMMANDERS 2ND IN COMMAND WHEN OF RANK LIEUT. COMD AND BELOW



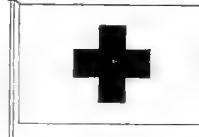
JACK



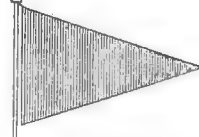
PENNANT



GUARD SHIP OR PILOT



MEDICAL GUARD FLAG



FOOD FLAG



Red



White



Blue



Azure



Green



Black

Uniforms.

Insignia of Rank on Sleeves—Executives.



CAPITAN DE NAVIO



Capitán de Fragata.



Capitán de Corbeta.



Teniente de Navio.



Alférez de Navio.



Alférez de Fragata.

Insignia of Rank on Sleeves—Other Ranks.



Aspirante.



Sub-Oficial.

1-4 stripes acc. to years of training

(Radio operator)

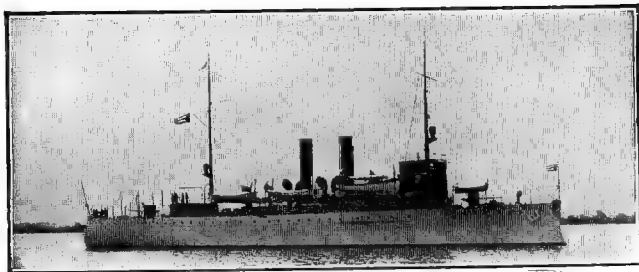
Blue shoulder pieces having stripes in same arrangement worn on white uniform and overcoat.

New Construction.

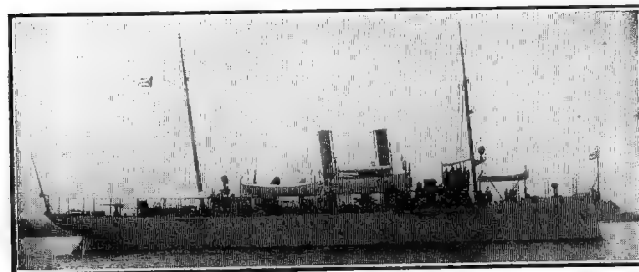
The following programme has been recommended, to involve an expenditure of 7,220,000 pesos, spread over a period of ten years:—

- 1 cruiser of 4,500—5,000 tons.
- 1 " " 2,500 tons.
- 8 gunboats of 900 tons.
- 8 " " 200 tons.

Cruisers.



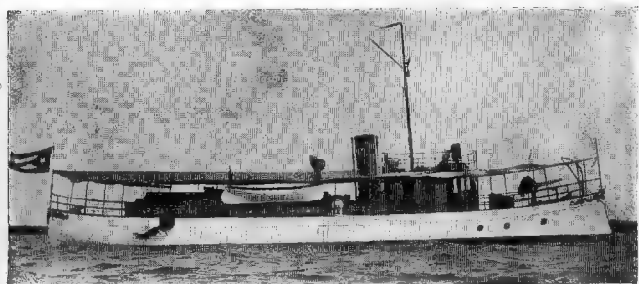
CUBA (Cramp, Philadelphia, 10th August, 1911). 2055 tons. Dimensions: (p.p.) $260 \times 39 \times 14$ feet. Armament: 2—4 inch, 6—3 inch, 4—6 pdr., 4—3 pdr., 2 machine. H.P. 6000=18 kts. Babcock boilers. Coal: 250 tons.



(Training Ship).

PATRIA (Cramp, Philadelphia, 10th August, 1911). 1200 tons. Dimensions: 200 (p.p.) $\times 36 \times 13$ feet. Guns: 2—3 inch (Bethlehem), 4—6 pdr., 4—3 pdr., I.H.P. 4000=16 kts. Babcock boilers. Coal: 150 tons.

Gunboats.

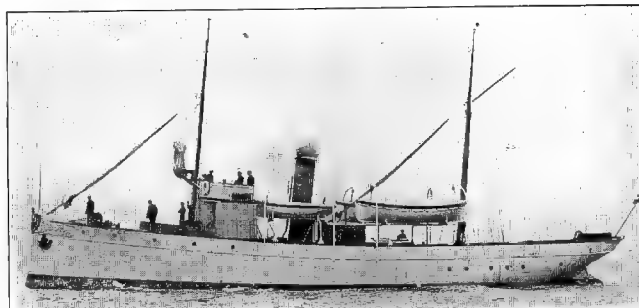


1921 Photo, by courtesy of Captain J. Morales Coello.

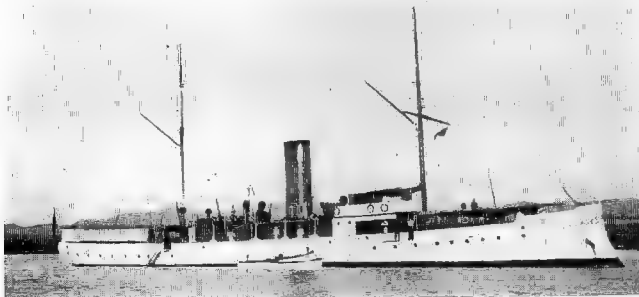
HABANA (1912) and **PINAR DEL RIO** (1912). Both wooden vessels of 80 tons, built at Havana. Dimensions: $100 \times 18 \times 6$ feet. Guns: 1—1 pdr. I.H.P. 200=12 kts. 1 screw. Coal: 20 tons.

MISCELLANEOUS.

Gunboats—continued.



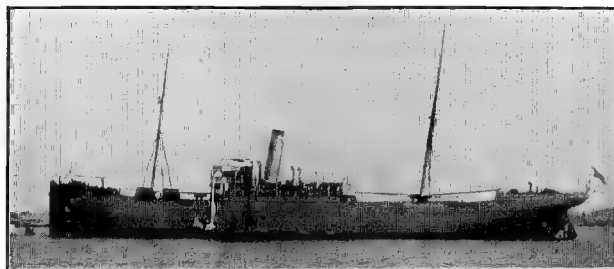
DIEZ DE OCTUBRE (J. Samuel White, Cowes, 1911), **VEINTE Y CUATRO DE FEBRERO** (J. Samuel White, Cowes, 1911). 218 tons. Dimensions: $110 \times 20 \times 8$ feet. Guns: 3—3 pdr. Speed: 12 kts. Coal: 50 tons.



1921 Photo, by courtesy of Captain J. Morales Coello.

BAIRE (Klawitter Yd., Danzig, 1906). 500 tons. Dimensions: $196 \times 23 \times 9$ feet. Guns: 4—3 inch, 2—3 pdr. H.P. 1200=14 kts. Babcock boilers. Coal: 120 tons. (Used as Presidential Yacht).

Naval Transport.



1925 Photo, by courtesy of Captain J. Morales Coello.

MAXIMO GOMEZ (ex-German s.s. *Constantia*, built by Barclay, Curle & Co., Glasgow, 1890). Acquired 1923. 3026 tons gross. $339\frac{1}{2} \times 41\frac{3}{4} \times 26\frac{1}{4}$ feet. H.P. 1600=11 kts. Guns: 4—3 inch, 2—3 pdr.

Coast Guard Patrol Vessels.

MATANZAS (1912), **VILLAS** (1912). Details as *Habana* and *Pinar del Rio*; differ in appearance.

ENRIQUE VILLUENDAS (Chester, U.S.A., 1899). 178 tons. $132 \times 20 \times 9$ feet. Guns: 2—3 pdr. I.H.P. 600=16 kts. Coal: 55 tons.

ALFREDO (Seabury, New York, 1896). Wood. 40 tons. Dimensions: $60 \times 12 \times 6$ feet. Guns: 1—1 pdr. Speed: 11 kts.

YARA (Middlesborough, 1895). 449 tons. $155 \times 26 \times 13$ feet. Guns: 2—6 pdr., 2—3 pdr. I.H.P. 600=12 kts. Coal: 150 tons.

MACEO (ex-Spanish gunboat, 1896). Wood. 35 tons. Dimensions: $75 \times 10 \times 5\frac{1}{2}$ feet. Guns: 1—1 pdr. Speed, 10 kts. Coal: 8 tons.

VEINTE DE MAYO (Glasgow, 1895). 203 tons. $141 \times 18\cdot5 \times 10\cdot5$ feet. Guns: 2—3 pdr., 2—1 pdr. I.H.P. 500=12 kts. Coal: 50 tons.

As Illustration for "SC-boats," U.S. Navy Section.

No. 1 (ex U.S. SC 274, Mare Island, Navy Yd.). **Nos. 2—4** (ex U.S. SC 302, 311, 312, Puget Sound, Navy Yd.). All built 1917-18. About 77 tons. Dimensions: 105 (w.l.) $\times 14\frac{3}{4} \times 5\frac{1}{2}$ feet. Guns: 1—3 inch (23 cal.), 2 Colt M.G. B.H.P. 660=16 $\frac{3}{4}$ to 18 kts.† Fuel: 2400 gallons petrol. Engines: 3 sets Standard motors.† Wooden hulls.

Note.

All 4 now employed for Coastguard duties, but on account of scarcity and high cost of fuel, are only used in emergency when high speed is required.

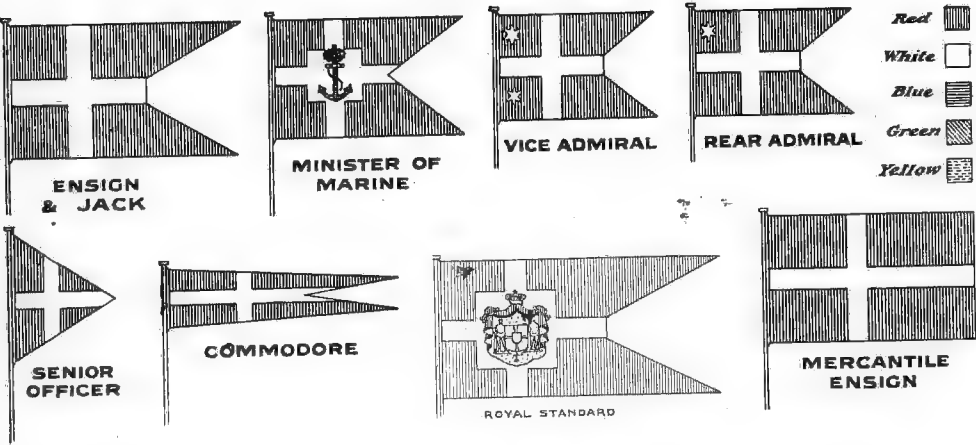
† Plans worked out for replacing motors by small boilers and reciprocating engine.

DENMARK—General Notes.

ROYAL DANISH NAVY.

(Officially revised by Ministry of Marine, 1929).

Flags.



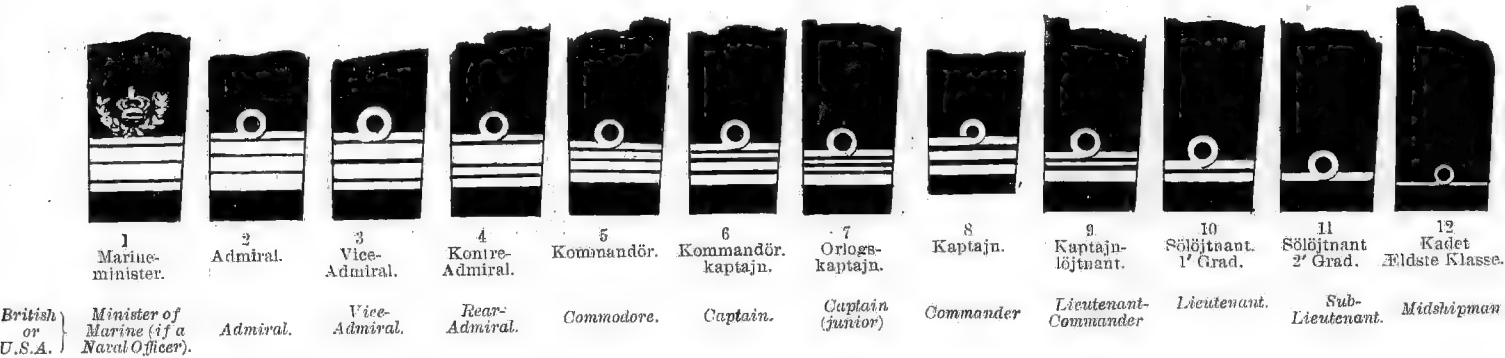
Note.—Division flag pennant, otherwise as commodore.

Naval Guns. (Officially revised, 1927.)

Bore:		Length in Calibres.	Make and Date of Model.	Weight of Gun	Weight of Projectile.	Muzzle Velocity.	Mounted in:
ins.	cm.			metric tons.	lbs.	ft.-secs.	
9.4	24	43	Bofors M. '06	24.5	352	2690	P. Skram
9.4	24	43	Bofors M. '01	24.3	353	2690	O. Fischer
9.4	24	40	Canet M. '96	22.9	353	2395	H. Trolle
5.9	15	45	Bofors M. '20	6.1	101	2740	Niels Iuel
5.9	15	50	Bofors M. '06	7.5	112	2723	P. Skram
5.9	15	43	Bofors M '96/'01	5.5	112	2313	O. Fischer, H. Trolle
4.7	12	40	Krupp M. '90	2.3	44	2395	Hejmdal,

Torpedoes:—45 c/m. heater type in nearly all vessels.

Insignia of Rank on Sleeves.



British or U.S.A. } Minister of Marine (if a Naval Officer).

The broad stripes in ranks 1—4 are 2.8 cm. wide.
The narrow " " 6, 7, 9 & 12 are 0.7 cm. wide.
The other stripes are 1.4 cm. wide. Distance between stripes is 0.7 cm.

Other ranks with special insignia are: Direktor for Marineministeriet (Director-General, Ministry of Marine). Uniform as Rear-Admiral, but with a golden crown inside curl.

Chef for Admiralitet Uniform as Commodore, but with a golden crown inside curl, and sword belt as flag officer.

Personnel: About 4000, all ranks.
Oversea Possessions: Greenland, Farøes Islands.
Minister of Defence: L. Rasmussen.
Director-General, Ministry of Marine: Rear-Admiral H. Rechnitzer.

Mercantile Marine.

From official "Code List" 1929 figures.
549 Steamships of 702,918 tons gross.
1097 Motorships of 336,990 tons gross.
286 Sailing Vessels of 41,523 tons gross

Note to pages following this.

All displacements given in metric tons. Where measurement of length is not stated, it can be taken as between perpendiculars (p.p.). All draughts max. load aft, unless otherwise stated.

Scale : 1 inch = 160 feet.

NO FUNNELS.



MINEKRAN Nr. 5.
MINEKRAN Nr. 6.
(Mining Vessels).

ONE FUNNEL, but so small as to be
invisible unless seen at close range.



GRÖNSUND.
(Depôt Ship for T.B.)

ONE FUNNEL.



SLEIPNER.



DAMPBAAD A
(Mining Vessel.)



MASTRAND class (2).
(Surveying Ships.)



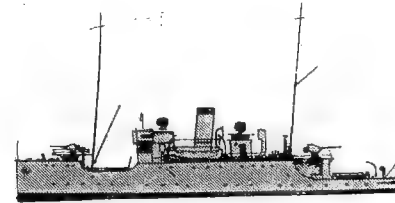
FENRIS.



LØSSEN.
(Mine-Layer.)



BESKYTTEREN.



H. GERNER.



NIELS IUEL.



DIANA.
(Fishery Cruisers.)



ISLANDS FALK.



HEJMDAL. (Training Ship.)



O. FISCHER } Covered in
H. TROLLE } S.L. positions.
P. SKRAM }

TWO FUNNELS.



DANNEBROG (Royal Yacht).



FYLLA.
(Now has shields to guns.)

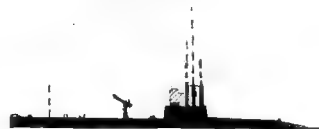
SUBMARINES. Scale : 1 inch = 80 feet.



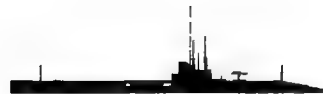
DAPHNE class (2).



HAVFRUEN class (3).



AEGIR class (5).



ROTA class (3).

(All three types now have mast before C.T.)

TORPEDO CRAFT. Scale : 1 inch = 160 feet.



TUMLEREN class t.b. (3).



HVALROSSEN class t.b. (3).



ORMEN t.b.



IMPROVED ORMEN
class t.b. (10).



SÖRIGGEREN class t.b. (3)

PATROL BOATS.

Scale : 1 inch = 160 feet.



P8.
(Now has topmast.)

NIELS IUEL (July, 1918.)

Displacement, { *normal*, 4200 tons. } Complement, 310.
 { *full load*, 4320 tons. }

Length { (p.p.), 285½ feet.
 (w.l.), — feet.
 (o.a.), 295½ feet } Beam, 53½ feet. Draught { *mean* 15½ feet.
 { *full load*, aft., 16½ feet.

Guns (Bofors):

- 10—5.9 inch, 45 cal.
- 2—14 pdr. (anti-aircraft).*
- 2—3 pdr. (for saluting).†

Torpedo tubes (17.7 inch heater):
 2 *submerged* (broadside).

*Mounted abaft funnel.

†Mounted below bridge, abaft C.T.

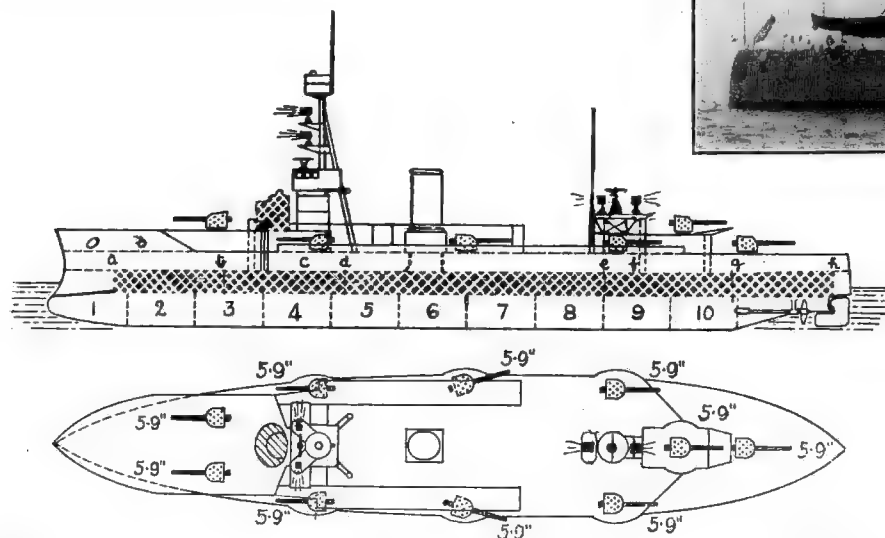
Armour (Krupp):

- 7½" Side (amidships d-e) {
- 7½" Side (forward & aft. a-d and e-h) {
- 6½" Bulkheads (forward and aft.)
- " Uptake to funnel ..
- 6½" Conning Tower
- 4" Tubes to C.T.
- 1½" Gun shields (½" at sides)
- 2½" Deck
- 2½" Deck (forward)

Machinery: Triple expansion. 2 screws. Boilers: 4 Yarrow (3 coal and 2 oil fired). Designed H.P. 5500=16 kts. Fuel: 250 tons coal + 240 tons oil. Endurance: about 5000 miles at 10 kts. Laid down Feb., 1914; first commissioned 23rd May, 1923, and now used as sea-going training ship for midshipmen.



1926 Photo, Lieut. R. Steen Steensen, R.D.N.



Ahead:

4—5.9 in.

Broadside: 6—5.9 in., 1—18 in. T.T.

Astern:

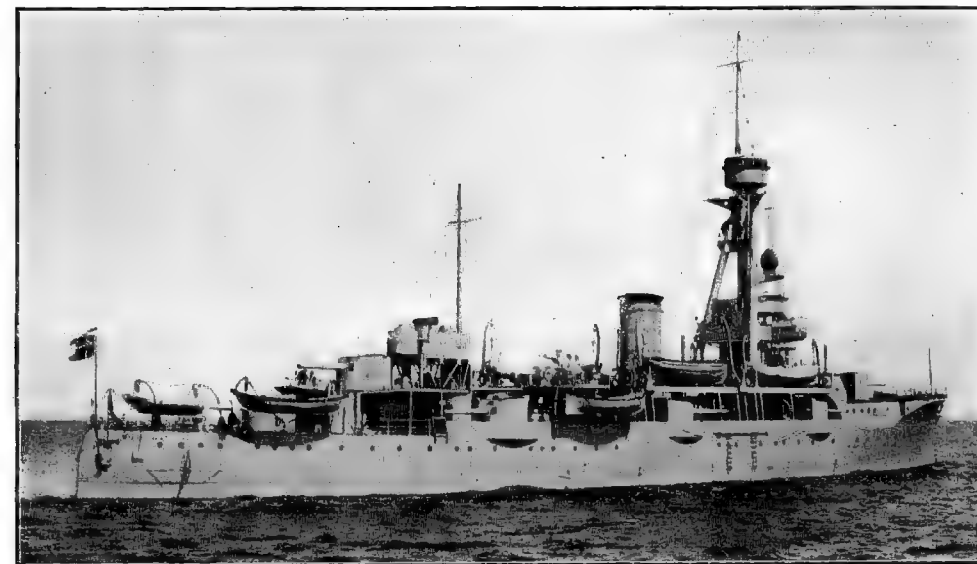
4—5.9 in.

Notes.

(a) *Gunnery*: The afterpart of conning tower contains an armoured range-finder, length about 9 feet. There is also another R.F. of same base length on after superstructure between the searchlights, and the 14 pdr. A.A. guns have a small R.F. on centre-line, between them. 5.9 inch guns elevate to 30°, and are reported to range up to 18,000 metres.

(b) *General*: Below foretop, the side tripod legs project in front of the centre leg, not joining in flush with the centre leg as in ordinary tripods. The searchlight platforms on foremast are set on the side tripod legs, at an angle of 45 degrees from right ahead. The starboard platform is about 15 feet lower than the port one. The boats are all carried on davits, even steamboats, and there is no main derrick or other lifting appliance.

(c) *Torpedo*: All four S.L. are 36 inch.

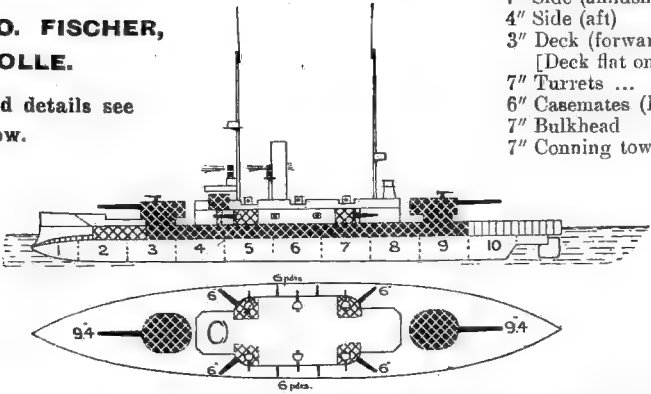


NIELS IUEL.

1925 Photo, Lieut. R. Steen Steensen, R.D.N.

**P. SKRAM, O. FISCHER,
H. TROLLE.**

For Tabulated details see
below.



Armour (*see Notes*):
7" Side (amidships) ...
4" Side (aft) ...
3" Deck (forward) ...
[Deck flat on belt.]
7" Turrets ...
6" Casemates (KNC) ...
7" Bulkhead ...
7" Conning tower ...

Ahead:
1—9·4 in.
2—5·9 in.

Astern:
1—9·4 in.
2—5·9 in.

Machinery: 2 sets, triple expansion, 2 screws. All are fitted with 6 Thornycroft boilers. Coal (*maximum*): 255 tons in *O. Fischer* and *P. Skram*; 245 tons in *H. Trolle*.

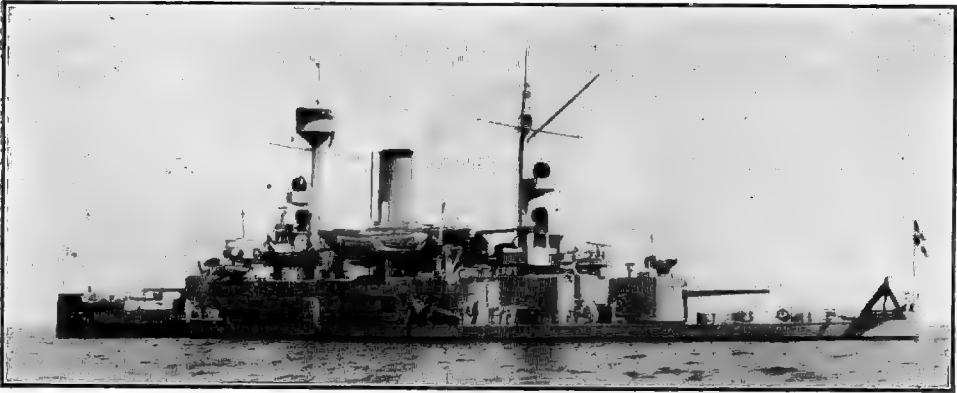
Gunnery Notes.—Bofors 1906 models in *P. Skram*; Bofors 1903 models in *O. Fischer*. In *H. Trolle* 9·4 inch are Canet 1896 model, and 5·9 inch are Bofors 1896 model.

Armour Notes.—Krupp armour in *P. Skram*, Creusot in other ships. Belt is 7 feet deep, 3½ feet above, and 3½ feet below water-line. It stops 20 feet from bow. Armoured deck is 3 feet above water line.

Torpedo Notes.—All tubes 18 inch and submerged: 1 bow, 1 stern, 2 broadside in *P. Skram*, 1 bow and 2 broadside in *O. Fischer* and *H. Trolle*.

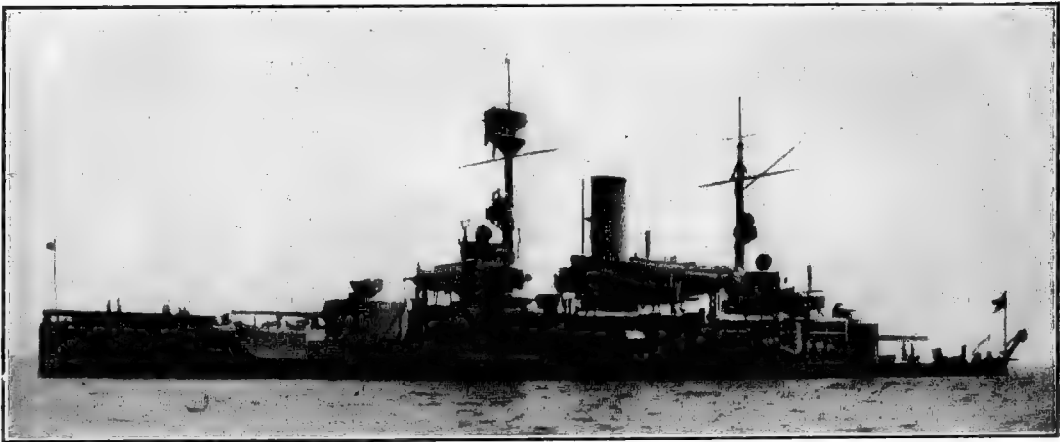
Engineering Notes.—Trial: H.P. and speeds given in Table below. Endurance is about 2000 miles at 10 kts. and 1050 miles at 14½ kts.

General Notes.—All built at Copenhagen Dockyard. In all 2—14 or 6 pdr. anti-aircraft guns mounted on crowns of 9·4 inch barbets. S.L. have been redistributed since plan was prepared.



OLFERT FISCHER.

1928 Photo, Lieut. R. Steensen, R.D.N.



OLFERT FISCHER.

1928 Photo, Lt. R. Steen Sørensen, R.D.N.

(*Herluf Trolle* similar but has larger steam pipe before funnel; *Peder Skram* has shorter funnel).

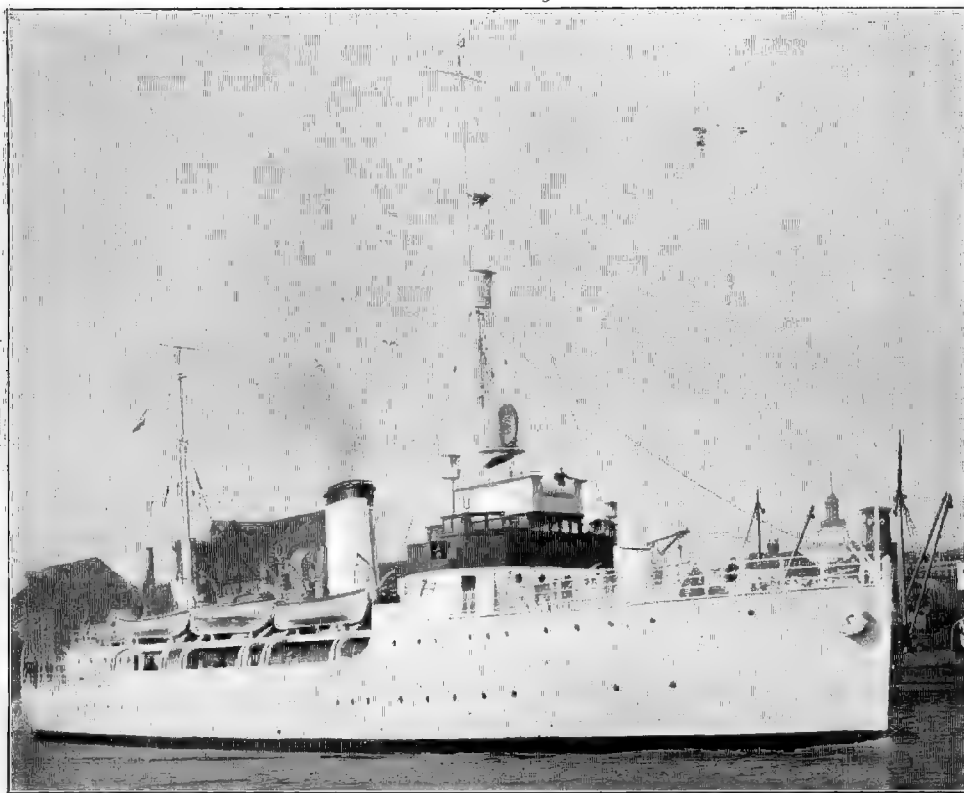
(HERLUF TROLLE CLASS—3 SHIPS.)

The three differ in dimensions and armament as follows:—

	PEDER SKRAM.	OLFERT FISCHER.	HERLUF TROLLE.
Launched ...	May, 1908	1903	1899
Displacement (tons)...	3800	3700	3650
Complement ...	271	265	265
Length (ft.) ...	275½ (p.p.)	271½ (p.p.)	271½ (p.p.)
Beam (ft.) ...	51½	50½	49½
Max. draught (ft.) ..	16½	16½	16½
Armament ..	2—9·4 inch, 43 cal. 4—5·9 inch, 50 cal. 8—14 pdr. 2—14 pdr. A.A.. 2—1 pdr.	2—9·4 inch, 43 cal. 4—5·9 inch, 43 cal. 6—14 pdr. 2—6 pdr. A.A.. 2—1 pdr.	2—9·4 inch, 40 cal. 4—5·9 inch, 43 cal. 6—14 pdr. 2—6 pdr. A.A.. 2—1 pdr.
All 18 inch tubes.	4 tubes (submerged)	3 tubes (submerged)	3 tubes (submerged)
H.P. | Trials |	5400	4600	4400
Speed |	16	16	16

DENMARK—Sloops.

Sloops.



(Officially rated as a Fishery Inspection Vessel.)

1929 Photo.

HVIDEBJØRNEN (Copenhagen Dockyard, Dec., 1928). Displacement 1084 tons. Complement 58. Dimensions: $156\frac{3}{4} \times 32 \times 13$ feet (*mean draught*). Guns: 2—3.4 inch. S.H.P. 2100 = 15 kts. 2 boilers (1 Babcock, 1 Thornycroft). Fuel: 140 tons. Radius: 3300 miles at 12 ks. On service in Greenland waters.

SLOOPS.

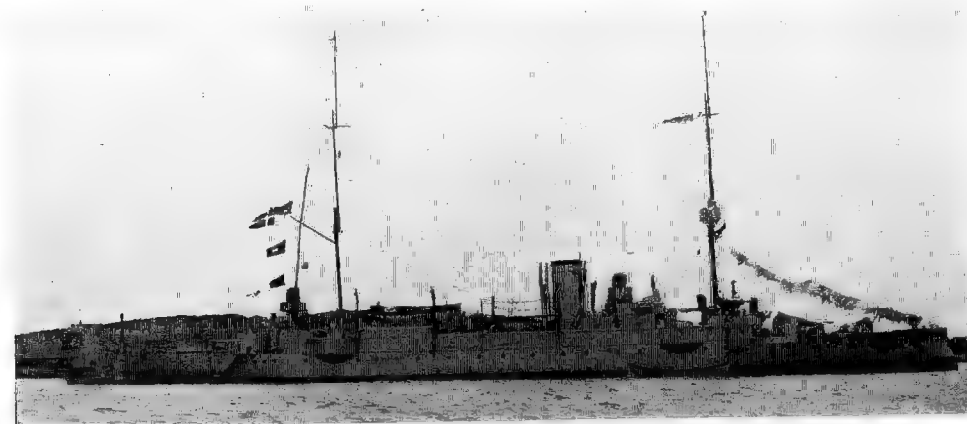


Now has shields to 4.7 inch guns.

1921 Photo, Lieut. R. S. Steensen, R.D.N.

(Used as Fishery Cruiser.)

FYLLA (ex-British Fleet Sweeping Vessel *Asphodel*, launched December, 1915, by Messrs. D. & W. Henderson, Glasgow. Sold to Danish Navy, June, 1920, refitted at Copenhagen D.Y.). Displacement as designed, 1250 tons, about 1300 tons now. Dimensions: $255\frac{1}{2}$ (p.p.), $267\frac{3}{4}$ (o.a.) $\times 33\frac{1}{2} \times 11$ (*mean*) 15 feet (*max. draught*). Guns: 2—4.7 inch, 2—6 pdr. Designed I.H.P. 1400 = 17 kts., but actually requires about 2400 H.P. for this speed. Machinery: 1 set triple expansion, 1 screw. Boilers: 2 cylindrical. Coal: 130 tons *normal*; 260 tons *max.* = about 2000 miles at 15 kts. Complement (as Danish Ship), 75. Built for British Navy under Emergency War Programme as a unit of the *Arabis* group of "Flower Class" Sloops. On service in Iceland waters.



(Officially classed as a Cruiser.)

1920 Photo, Lieut. R. Steen Steensen, R.D.N.

HEJMDAL (1894, rebuilt 1909). 1313 tons. Complement, 156. Dimensions: $231\frac{3}{4}$ (p.p.) $\times 34 \times 11\frac{3}{4}$ feet. Guns (Krupp): 2—4.7 inch, 4—20 pdr., 2—6 pdr., 2—6 pdr. AA., 2 machine. Torpedo tubes*: 1—18 inch. Armour: $1\frac{1}{4}$ " deck amidships, 6" engine hatches, $1\frac{3}{4}$ " hoists. H.P. 3100 = 17 kts. Thornycroft boilers. Coal: 150 tons. Built at Copenhagen D.Y. Training Ship for Midshipmen. Will be condemned in near future.

* Above water, bow.

20 + 3 (building) Torpedo Boats. (Torpedobaade).

("Improved Ormen" class, single screw; next three classes twin screw; last class single screw).

No	Class	Date	Dis- place- ment	H.P.	Max. speed	Fuel	Com- ple- ment	T. tubes	Max. draught
			tons		kts.	tons			feet
3	<i>Dragen</i> (Ny)	Bldg.	300		30			8	
10	<i>Improved Ormen</i> (Ny)	15-19	108	2000	24.3	15 tons coal	22	2*	9
3	<i>Hvalrossen</i> (Ny)	1913	187	3500	26	29 tons coal	30	4	7
3	<i>Søridderen</i> (Y)	1911	271	5000	27.5	80 tons coal	33	5	6½
3	<i>Tumleren</i> (S)	1911	295	5000	27.0		33	5	7½
1	<i>Ormen</i> (No)	1907	105	2100	24.5	11 tons coal	21	3	8½

(Ny)=Navy type (S)=Schichau type. (Y)=Yarrow type. (No)=Normand type.
* Also have two depth charge tubes.

Building.

3 boats: **DRAGEN, HVALEN, LAXEN**, all by Copenhagen D. Y. Displacement 300 tons, with turbine engines to give a speed of about 30 kts. with oil fuel. Armed with 2—3 inch AA. guns and 8 tubes (6 deck and 2 bow).

Note.—In 1923 all Danish Torpedo Boats were numbered as follows:—

No.	Name	No.	Name	No.	Name	No.	Name
B 11	<i>Sølen</i>	B 6	<i>Havhesten</i>	E 3	<i>Sværdfisken</i>	D 1	<i>Søridderen</i>
B 10	<i>Havkatten</i>	B 5	<i>Søhunden</i>	E 2	<i>Delfinen</i>	C 3	<i>Spakluggeren</i>
B 9	<i>Nordkaperen</i>	B 4	<i>Søløven</i>	E 1	<i>Hvalrossen</i>	C 2	<i>Vindhunden</i>
B 8	<i>Makrelen</i>	B 3	<i>Støren</i>	D 3	<i>Sølven</i>	C 1	<i>Tumleren</i>
B 7	<i>Narhvalen</i>	B 2	<i>Springeren</i>	D 2	<i>Flyvefisken</i>	B 1	<i>Ormen</i>



SØLØVEN.

1922 Photo, Lieut. R. S. Steensen, R.D.N.

10 Improved Ormen class: **Havkatten B 10, Sølen B 11** (both launched 1919), **Havhesten B 6, Makrelen B 8, Narhvalen B 7, Nordkaperen B 9, Søhunden B 5** (all launched 1917), **Søløven B 4, Springeren B 2, Støren B 3** (all launched 1916). All by Copenhagen D.Y. Dimensions: 126'3 (o.a.)×13'9×8'8 feet normal draught (9 feet full load draught). Armament: 2—6 pdr., 30 cal. (anti-aircraft), 2—18 inch tubes (one bow, one deck, both above water), and two depth charge tubes. B 2-6 and B 8 are fitted with minesweeping gear.



Note.—For these boats, the Normand "Ormen" design was adopted, but various modifications were introduced by the Ministry of Marine. Officially this class (as well as *Ormen*) are rated as "Bevogtningsfartøjer (Torpedobaade)" (= Watch Duty Torpedo Boats). They are intended for use as Patrol Vessels, in guarding minefields, etc.

Torpedo Boats—continued.



HVALROSSEN. (*Hvalrossen* has only raised fore funnel).

1922 Photo, Lt. R. S. Steensen, R.D.N.



SVÆRDFISKEN.

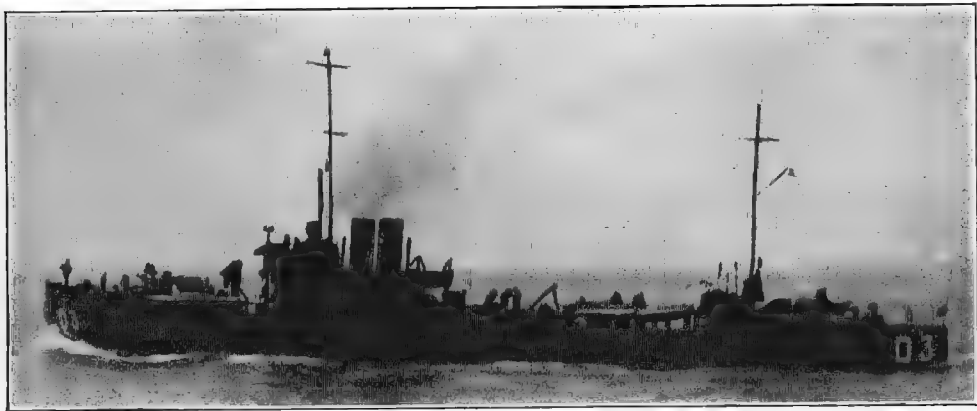
1926 Photo, Lieut. R. S. Steensen, R.D.N.

3 Hvalrossen type: **Delfinen, E 2, Hvalrossen, E 1, Sværdfisken, E 3**, (all 1913), built at Copenhagen Dockyard. Dimensions: 118½×17×7 feet. Armament: 1—11 pdr. (aft.), 4—18 inch tubes, viz.: one bow, one twin, and one single deck mounting, all being above water.

Note.—In sketch annexed, twin tube should be shown as astern of single ones.



(Continued on next page.)

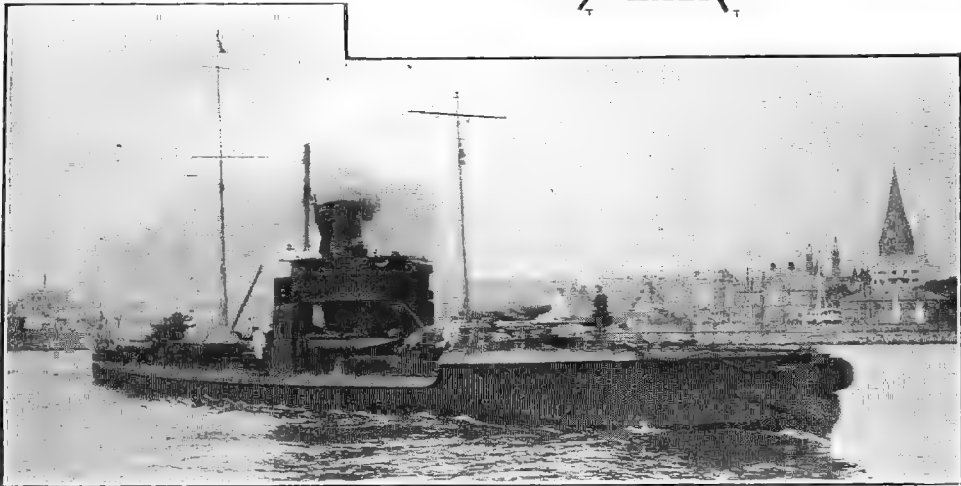


SÖULVEN.

1927 Photo, Lieut. R. Steen Steensen, R.D.N.

3 Yarrow type: **Söriggeren, D 1, Söulven, D 3, Flyvefisken, D 2**, (all 1911). First built by Yarrow others by Burmeister & Wain, Copenhagen. Dimensions: 181½ × 18 × 6½ feet. Armament: 2—14 pdr., 5—18 inch tubes. There are 10 w.l. compartments. On trial did 5300 I.H.P.=28.2 *mar.* Curtis turbines in *Söriggeren*. Yarrow boilers in all.

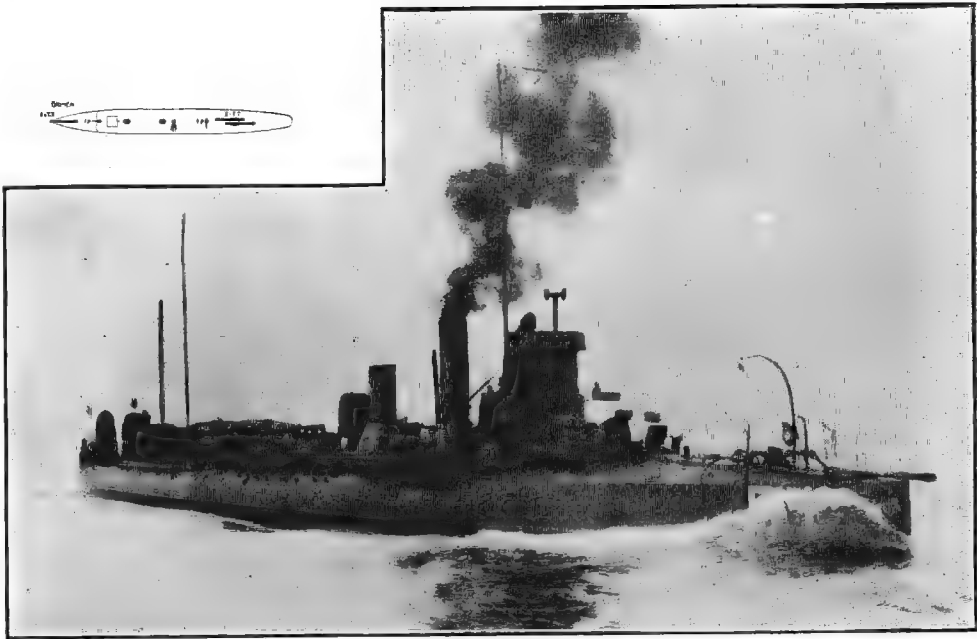
SÖRIGGEREN and TUMLEREN classes.



VINDHUNDEN.

1917 Photo, Ebbesen, Aarhus.

3 Schichau type: **Tumleren, C 1, Vindhunden, C 2, Spækhuggeren, C 3** (all 1911). First by Schichau, others by Copenhagen Dockyard. Dimensions: 184'9 (o.a.) × 19'1 × 7'5 feet. Armament: 2—14 pdr., 5—18 inch tubes, 1 in bows *above water*, other 4 on deck. Turbine engines and Normand boilers in all.



ORMEN.

1927 Photo, Lieut. R. Steen Steensen, R.D.N.

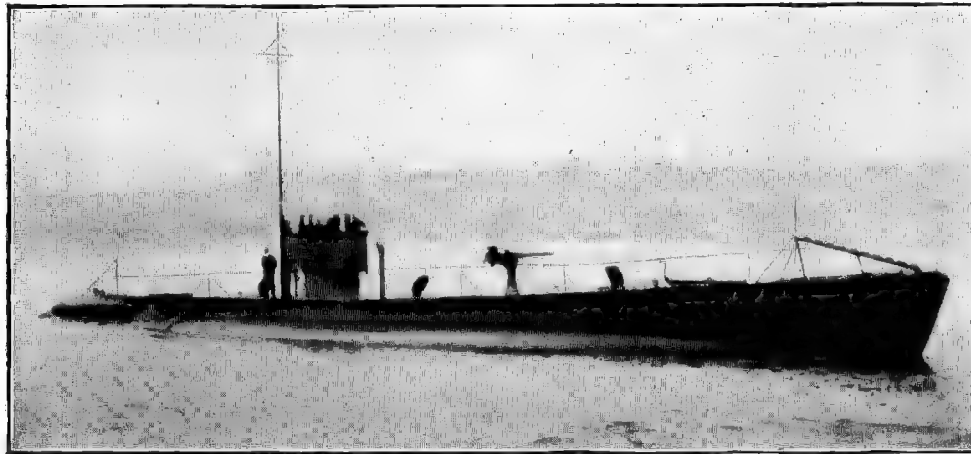
1 Normand type: **Ormen, B 1** (Copenhagen D.Y. 1907). 121'7 (o.a.) × 13'9 × 8'5 feet. Armament: 2—1 pdr., 1—18 inch tube (bow, *above water*), 2—18 inch amidships. Cruising speed is 12 kts.
Note.—Officially classed as "Watch duty Torpedo Boat."

13 Submarines (*Undervandsbaade*).

No.	Type	Date.	Dis- place- ment	H.P.	Max. speed	Fuel Stowage: Oil.	Tubes	Com- ple- ment	Max. draught
			tons			tons.			feet
2	<i>Daphne</i> (N)	'24-'27	325 380	1000 650	11 9	...	6	20	8
3	<i>Rota</i> (N)	'15-'21	301 369	1000 650	15 10½	12.3	5	17	8¾
5	<i>Aegir</i> (H)	'12-'15	185 235	450 340	13.5 9.8	8	3	11	8
3	<i>Havfruen</i> (H)	'11-'14	164 204	450 275	13½ 9.3	7.5	2	11	8

(N)=Navy type. (H)=Holland type, designed by Messrs. Whitehead, Fiume.

Note.—Danish Submarines numbered thus for identification purposes: *Havfruen* A2 —, *Najaden* A6 —, *Nymfen* A7 —, *Aegir* B8 —, *Ran* B9 —, *Triton* B10 —, *Neptun* B11 —, *Galathea* B12 —, *Rota* C1 —, *Bellona* C2 —, *Flora* C3 —, *Daphne* D1, *Dryaden* D2.



DRYADEN.

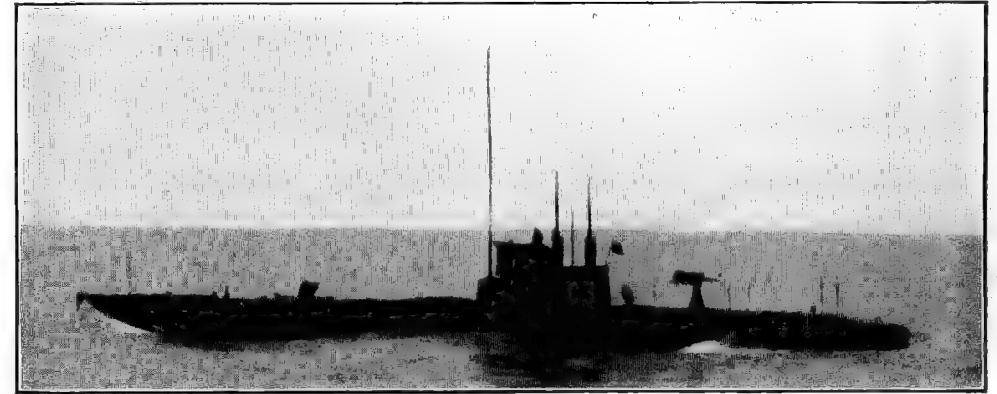
1928 Photo, Lieut. R. Steen Steensen, R.D.N.

2 Navy type: *Daphne* (Dec., 1925), *Dryaden* (June 3, 1926). Built at Copenhagen D.Y. Burmeister & Wain 6-cylinder, 4-cycle Diesel engines of 1000 B.H.P. = 14 kts. on surface. Motors of 650 H.P. = 9 kts. submerged. Dimensions: About 160 × 15 × 9 feet. Armament: 1—14 pdr. AA. gun, 4 bow and 2 stern 18 inch tubes. *Daphne* completed 1926, *Dryaden* 1927.

Notes.—These boats are practically enlarged *Rotas*, with same H.P., but finer lines. They bear some resemblance to French *Carissan* type as regards arrangement of net-cutter at bow, but have only a single mast.

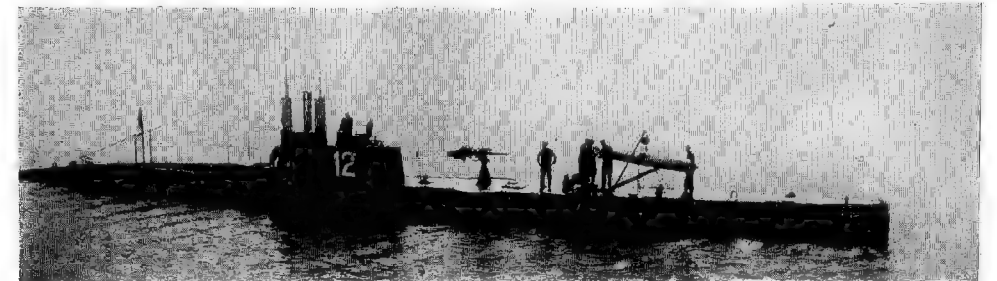
3 Navy type: *Bellona* (1919), *Flora* (1920), and *Rota* (1918). All built at Copenhagen D.Y. Burmeister & Wain 6-cylinder, 4-cycle Diesel engines. Dimensions: 155.7 × 14.4 × 8.8 feet. Armament: 1—6 pdr. anti-aircraft gun; 4—18 inch torpedo tubes: 3 bow, 1 stern. *Rota* has one deck tube in addition, abaft C.T.

For illustration of Navy type: *Flora*, see next column.



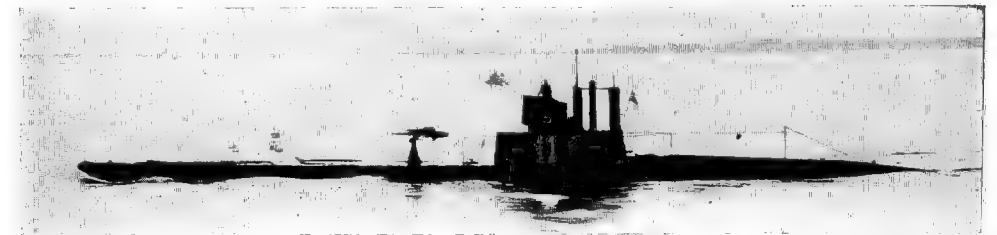
FLORA.

1927 Photo, Lieut. R. Steen Steensen, R.D.N.



GALATHEA.

1920 Photo, Lieut. R. Steen Steensen, R.D.N.



NEPTUN.

1923 Photo, Lieut. Steensen, R.D.N.

5 Holland type:—*Aegir* (1914), *Galathea* (1916), *Neptun* (1915), *Ran* (1915), *Triton* (1915), all built at Copenhagen D.Y. Diesel motors. Dimensions: 133½ × 12 × 8 feet. Armament: 1—6 pdr. anti-aircraft, and 3—18 inch torpedo tubes, 2 bow 1 stern. These boats are an enlarged and slightly improved *Havmanden* design.



NAJADEN.

1923 Photo, Lieut. Steensen, R.D.N.

3 Holland type: *Havfruen* (1912), built by Whitehead & Co., Fiume, and *Najaden* (1913), *Nymfen* (1914), both built at Copenhagen D.Y. 1 set 6-cyl. Diesel engines. Dimensions: 118 × 11.9 × 8 feet. 2—18 inch torpedo tubes in bows.

Note.—*Havfruen* is at present in Reserve.

DENMARK—Patrol Boat and Mining Vessels.

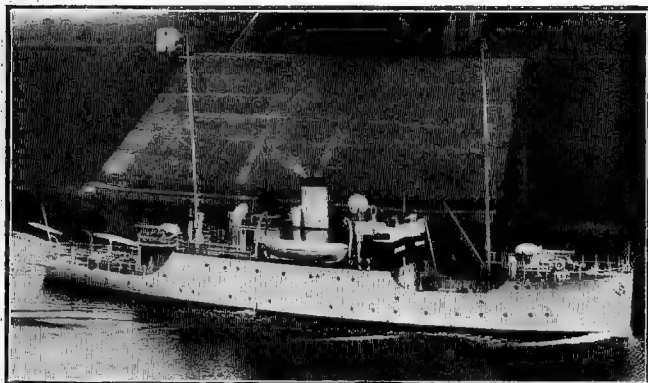
Patrol Boat. (*Patrøllebaad*.)



P8. 1927 Photo, *Lieut. R. Steen Steensen, R.D.N.*

P8. Built 1894-95. 47 tons. Guns: 1—3 pdr., 1 M.G. Tubes: 1—14 inch. I.H.P. 330 = 14 kts. Complement, 13. At present serves as Tender to submarines.

Submarine Depot and Repair Ship.



HENRIK GERNER.

1928 Photo.

HENRIK GERNER (1927). Displacement, 500 tons. $160 \times 27 \times 8$ feet. Guns: 2—14 pdr. 2 Burmeister & Wain 6-cylinder, 4-cycle Diesel engines of 900 combined B.H.P. = 13.2 kts. Oil: 45 tons. Complement, 40. Fitted for minelaying.

PATROL BOAT AND MINING VESSELS.

Depôt Ship for Torpedo Craft.



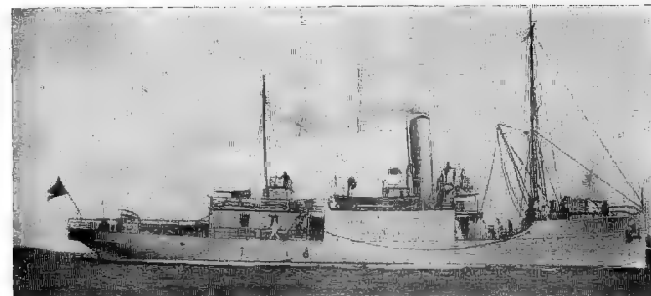
(Topmasts now removed).

1920 Photo, *Lieut. Steensen, R.D.N.*

GRØNSUND (1883, re-built 1905-6 and 1917-18). Old gunboat of 260 tons. Complement, 20. 119 (*p.p.*), 125.3 (*o.a.*) $\times 20 \times 8.1$ feet. Guns: 2—6 pdr. A.A. B.H.P. 250 = 11 kts. Has internal combustion engines with "electric drive."

Note.—This vessel is about to be scrapped.

Mine Ship—(*Mineskib*).



Photo, Ministry of Defence (added 1921).

LOSSEN (1910). 630 tons. Complement, 53. 149.3 (*p.p.*) $\times 28 \times 9.5$ feet. Guns: 2—14 pdrs. I.H.P. 900 = 13 kts. Coal: 20 tons. 175 mines carried.

Mining Craft—(*Minekraner*.)



1920 Photo, *Lieut. Steensen, R.D.N.*

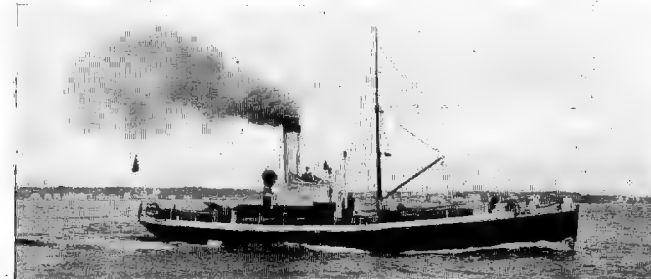
MINEKRAN V* (1917), **MINEKRAN VI†** (1919), both built at Copenhagen D.Y. 200 metric tons. Dimensions: 88.5 (*p.p.*) $\times 20.7 \times 6.6$ feet (*mean draught*). Guns: 2—1 pdr. Machinery: in each, 2 sets of Bergsund surface-ignition, heavy-oil motors and electric drive. B.H.P. 290 = 10 kts. Complement, 26. Carry 60 mines.

In Danish * *V=Fem*; † *VI=Seks*.

No photo available.

DAMPBAAD A (ex *Minekran I*) (1896). 110 tons. Dimensions: 72.2 $\times 16.4 \times 6.6$ feet. Guns: 2 machine. Speed: 8 kts. Complement, 18.

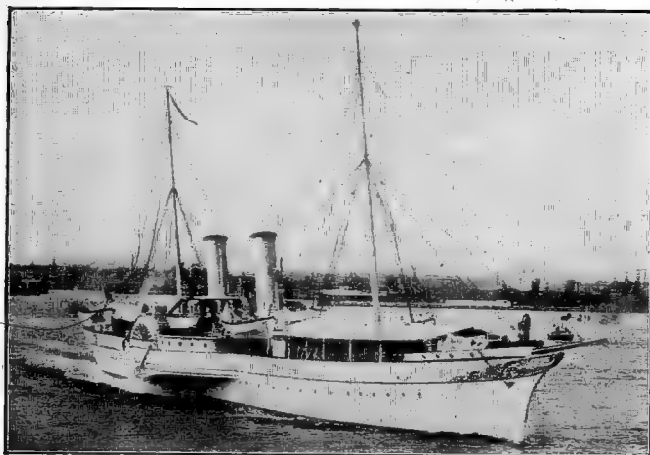
Torpedo Transport (*Torpedo Transportbaad*).



SLEIPNER (1882) 80 tons. 73 $\times 14.8 \times 5.9$ feet (*mean draught*). Guns: none. I.H.P. 110 = 9 kts.

MISCELLANEOUS VESSELS.

Royal Yacht (*Kongeskib*).



1925 Photo, by courtesy of the Navy Dept.

DANNEBROG (1879). 1100 tons. 235 (p.p.) \times 26'8 \times 10'4 feet. Guns: 2 M.G. I.H.P. 940=13 kts. Complement, 56.

Surveying Ships (*Opmaalingskibe*).



WILLEMOËS.

1925 Photo, Lieut. R. Steen Steensen, R.D.N.

MARSTRAND, 170 tons, **WILLEMOËS**, 160 tons. (Both built 1861, re-built 1896). 114 \times 17'5 \times 6'4 feet (mean draught). Both launched 1861. Complements, 28 to 39. I.H.P. 250=11 kts. Guns: 2 machine. *Marstrand* was completely refitted, 1922-23.

Training Ships (*Skoleskibe*).

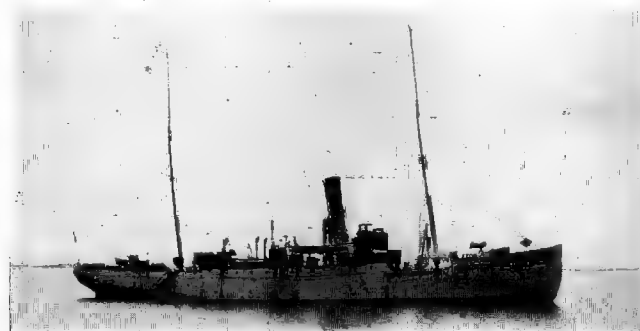
HEJMDAL (described on a previous page) used as Training Ship for Midshipmen.

Two Sailing Vessels, *Ceres* and *Nordlyset*, purchased 1929.

Also six Cutters, *Ambition*, *Svanen*, *Mary Rosa*, *Boy*, *Saga* and *Thyra*.

Fishery Patrol Vessels (*Fiskerriinspektionskibe*)

For Sloops *Fylla*, and *Hvidbjørnen* used on this service, see an earlier page.



1921 Photo, Lieut. R. S. Steensen, R.D.N.

ISLANDS FALK (Elsinore 1906). 775 tons. Complement, 63. 170'6 (p.p.), 183'6 (o.a.) \times 29'3 \times 14'7 feet. Guns: 2—6 pdr., 2—3 pdr. I.H.P. 1100=11'7 kts. (f.d.). Cruising speed is 9 kts. Reboilered 1921. Employed on North Sea Fisheries.

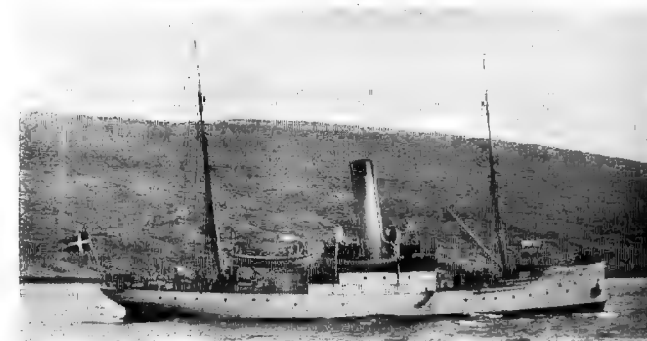


1920 Photo, Lieut. Steensen, R.D.N.

DIANA (Holland, 1916). 260 tons. 116'5 (p.p.), 124'8 (o.a.) \times 21'5 \times 8'8 feet. Guns: 2—3 pdr. I.H.P. 400 = 11'5 kts. Complement, 27.

Miscellaneous—DENMARK

Fishery Patrol Vessels—continued.

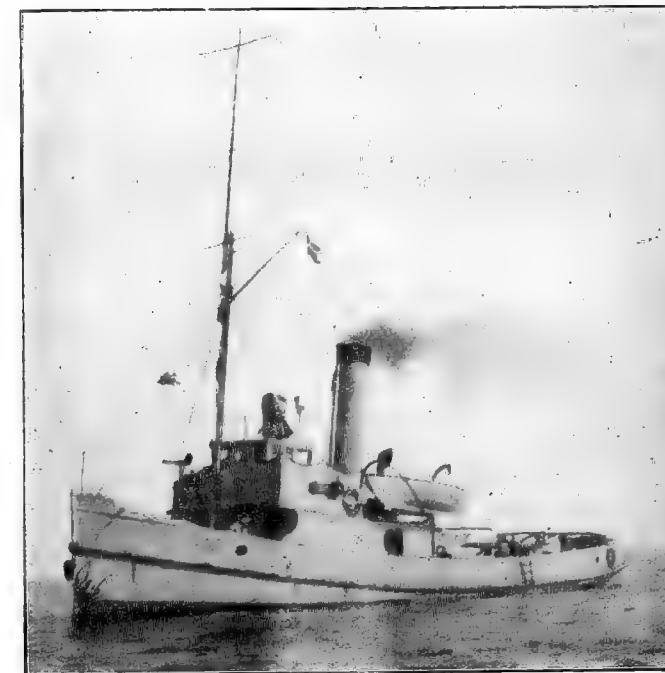


1921 Photo, Lieut. R. S. Steensen, R.D.N.

(Fishery Cruiser, Farøes Islands).

BESKYTTEREN (1900). 447 tons. Comp. 73. 134 (p.p.), 142'5 (o.a.) \times 24'8 \times 11'5 feet. Guns: 1—6 pdr., 2—3 pdr. I.H.P. 620=12'5 kts. (f.d.). Cruising speed is 9 kts. Re-boilered 1920.

Tender.



FENRIS.

1926 Photo, Lieut. R. S. Steensen, R.D.N.

FENRIS (Holland, 1915). 190 tons. 86'4 (p.p.) \times 20'7 \times 9'2 feet. Guns: 2—3 pdr. I.H.P. 420=12 kts. Complement, 18. Employed as Tug and Squadron Tender.

ESTONIAN FLEET.

(Officially revised by courtesy of the Chief of the Naval Staff, Tallinn, 1929.)
(All photos by courtesy of Chief of Naval Staff, 1929).

Naval Uniforms.



Rank
(British equivalent)
Admiral
(Admiral)

Asc-Admiral
(Rear-Admiral)

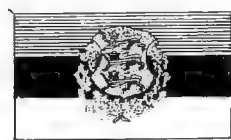
Meremae-Kapten
(Captain)

Asc-Kapten
(Commander)

Vanem-Leitnant
(Lieut.-Commander)

Leitnant
(Lieutenant)

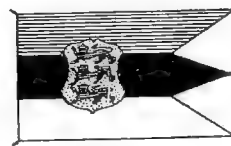
Noorem-Leitnant
(Sub-Lieutenant)



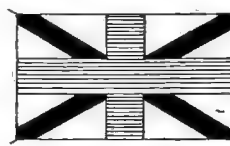
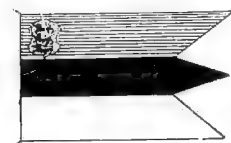
Chief of State.



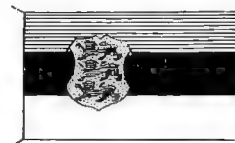
Pendant of Chief of State.



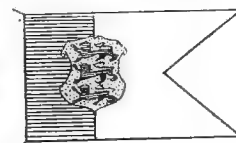
Ensign.

Jack,
Flag of Coastal Batteries.

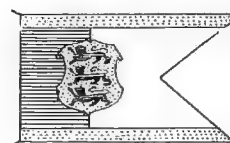
Auxiliary Craft. (Ensign.)



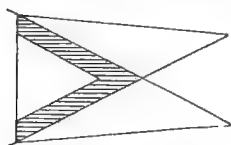
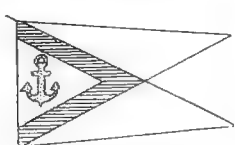
Minister of War.



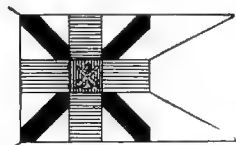
R. Admiral.



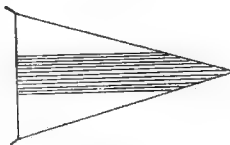
C. in C.

Chief of Naval Forces,
(If not Admiral).

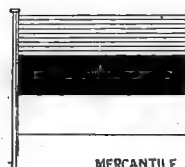
Chief of Division.



Chief of Coastal Batteries

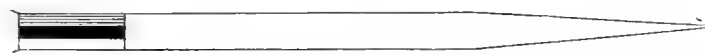


S.N.O.



MERCANTILE ENSIGN.

PALE BLUE.
BLACK.
WHITE.



Masthead Pendant.

Minister of War: General Nikolai Reek.
Commander-in-Chief of Fleet and Coast Defence: Rear-Admiral H. Salza.
Chief of Naval Staff: Commander V. Grenz.
Naval Officers and Men: 1600
Colour of Ships: Grey.
Mercantile Marine (1929 official figures): Total gross tonnage, 83,451.

2 Destroyers. (*Mini Ristlejad.*)

(Both captured by British Cruisers and Destroyers in the Baltic, in Dec., 1918, and transferred to Estonian Navy.)



1929 Official Photo.

Lennuk (ex-Russian *Astroil*). Launched at Tallinn by Reval Shipbuilding Co., 1915, completed 1917. Displacement: 1800 tons. Dimensions: 344½ × 31½ × 10½ feet. Guns: 5—4 inch, 60 cal., 1—3 inch AA., 2—57 m/m., 1—2 pdr. Pom-pom, 2 M.G. Torpedo tubes: 9—18 inch, in 3 triple deck mountings. Designed to carry and lay 80 mines. Designed S.H.P. 32,700 = 32 kts. A.E.G. Curtis turbines. Oil fuel: 400 tons = 2400 miles at 15 kts. Complement, 125.

Note.—This vessel was built to the design of Chantiers et Ateliers Augustin Normand, Le Havre.



1929 Official Photo.

Vambola (ex-Russian *Spartak*, ex-Mikluku Maklai). Launched by Putilov Works, Petrograd, 1915, and completed 1918. Displacement: 1585 tons. Dimensions: 314½ × 30½ × 10 feet. Guns: 4—4 inch, 60 cal., 1—2 pdr. Pom-pom, 2 M.G. Torpedo tubes: 9—18 inch, in 3 triple deck mountings. Designed to carry and lay 80 mines. Designed S.H.P. 30,000 = 32 kts. A.E.G. Curtis turbines. Oil fuel: 400 tons = 2500 miles at 15 kts. Complement, 115.

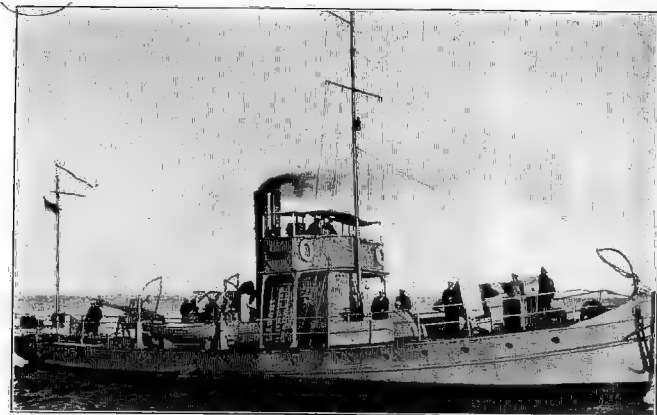
Torpedo Boat.



1929 Official Photo.

Sulev (ex-German A32). Built at Elbing, 1916. (Sunk off Estonian Coast, October, 1917, salvaged and refitted 1923.) Displacement, 228 tons. Dimensions: $165\frac{1}{2} \times 17\frac{1}{2} \times 6$ feet. Guns: 2—3 inch, 50 cal. Torpedo tubes: 2—18 inch, in double deck mounting. Can carry 10 mines. Designed S.H.P. 3500 = 26 kts. Oil: 50 tons = 975 miles at 20 kts. Complement, 35.

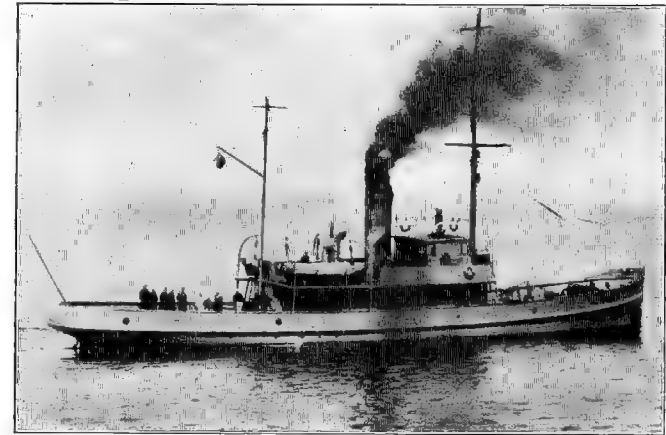
Gunboats. (*Suurviiki Laevad*).



1929 Official Photo.

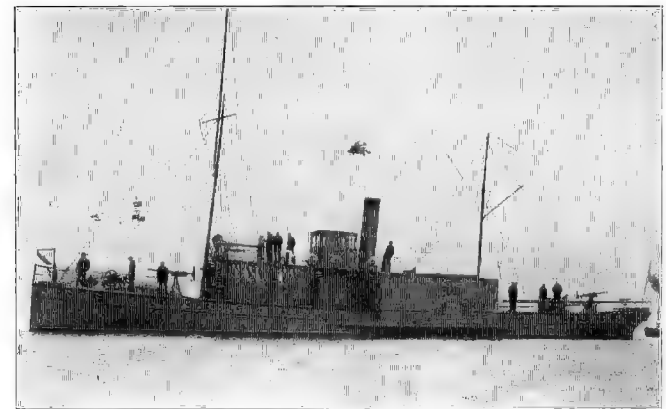
MARDUS. Refitted 1921. 80 tons. Dimensions: $90 \times 21 \times 7$ feet. Guns: 2—3 inch, 50 cal., 2 M.G. Designed H.P. 225 = 11 kts. Complement, 25.

Gunboats—continued.



1929 Official Photo.

LAENE (1915). 400 tons. Dimensions: $129 \times 20 \times 11\frac{1}{2}$ feet. Guns: 1—57 m/m. Designed H.P. 350 = 12 kts. Coal: 80 tons. Complement, 25.

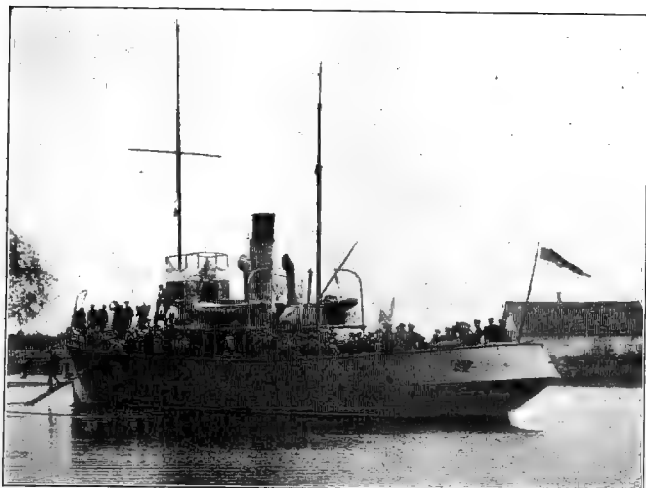


1929 Official Photo.

***TARTU.** Paddle vessel. Refitted 1919. 108 tons. Dimensions: $128\frac{1}{2} \times 17\frac{1}{2} \times 2\frac{3}{4}$ feet. Guns: 2—47 m/m., 2 M.G. Designed H.P. 120 = 11 kts. Complement, 20.

*Stationed in Peipus Lake.

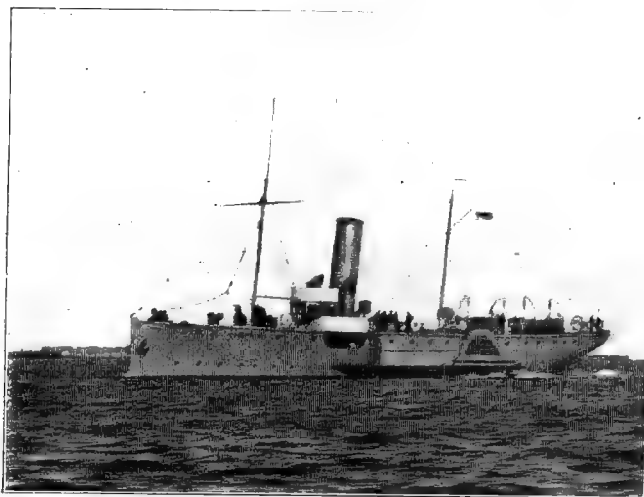
Gunboats—continued.



***AHTI.** Built 1908, refitted 1919. 144 tons. Dimensions: $90\frac{1}{2} \times 16\frac{1}{2} \times 6$ feet. Guns: 2—47 m/m., 2 M.G. Designed H.P. 220 = 10 kts. Complement, 17.
*Stationed in Peipus Lake.

1929 Official Photo.

Minelayers.



RISTNA.

1929 Official Photo.

RISTNA (1908), **SUURO** (1907). Paddle Vessels. Refitted 1927. 500 tons. Dimensions: $198\frac{1}{2} \times 49\frac{1}{2}$ (over paddle boxes) $\times 6\frac{1}{2}$ feet. Guns: 1—3 inch, 50 cal., 1—1 pdr. Pom-Pom. Designed H.P. 750 = 12.5 kts. Complement, 40. Also fitted for use as Minesweepers.

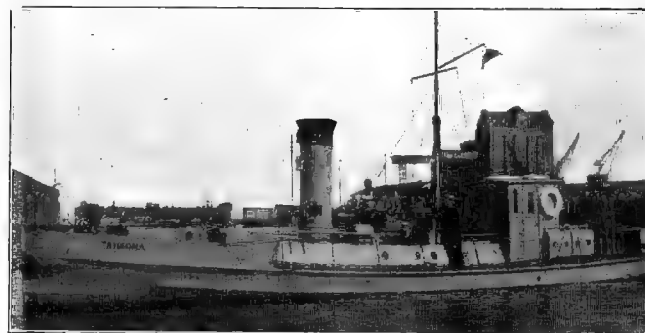
MISCELLANEOUS

Minelayers—continued.

KALEV (ex-Russian *M.S.*), **OLEV** (ex-Russian *M.10*) (1914). 50 tons. Dimensions: $68\frac{1}{2} \times 15 \times 4$ feet. Guns: 1—57 m/m. Engines: 2 sets of petrol motors. Designed H.P. 80 = 9 kts. Complement, 10.

Minesweeper.

(See also *Ristna* and *Suuro*, in preceding column.)

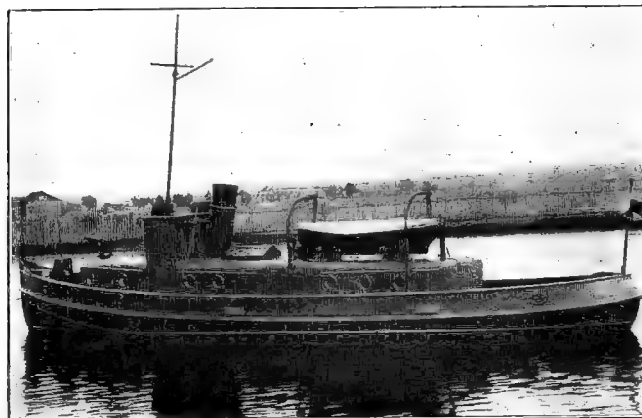


1929 Official Photo.

TAHKONA (1919). 45 tons. Dimensions: $57\frac{1}{2} \times 10\frac{1}{2} \times 5\frac{1}{2}$ feet. Designed H.P. 150 = 12 kts. Complement, 8.

Coastguard Vessels.

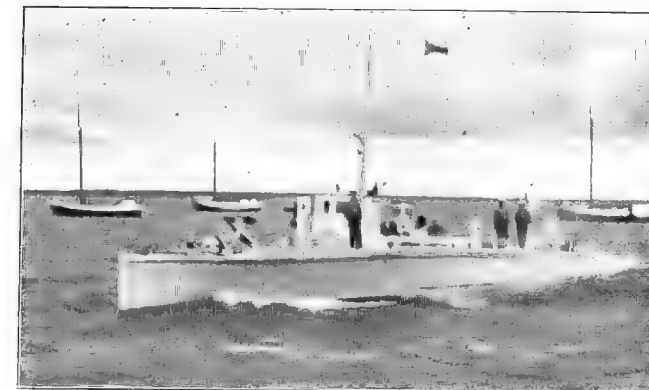
KOU. Refitted 1928. 100 tons. Dimensions: $87 \times 17\frac{1}{2} \times 8\frac{1}{2}$ feet. Guns: 1—50 m/m., 2 M.G. Designed H.P. 350 = 12 kts. Complement, 18.



1929 Official Photo.

ERILANE. Built 1915, refitted 1919. 25 tons. Dimensions: $53 \times 10 \times 5$ feet. 1 M.G. Designed H.P. 50 = 10 kts.

Coastguard Vessels—continued.

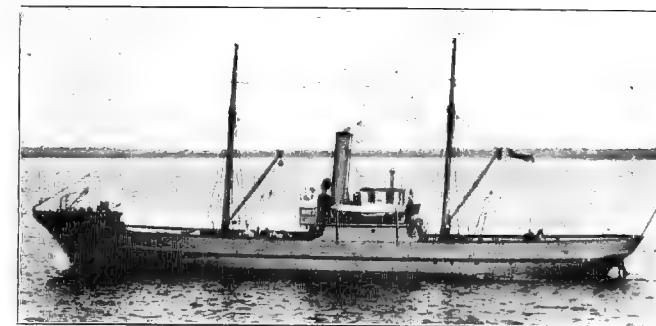


1929 Official Photo.

M.P.2. (1919). 16 tons. Dimensions: $66\frac{1}{2} \times 10 \times 6\frac{1}{2}$ feet. 1 M.G. Engines: 3 sets of petrol motors. Designed H.P. 540 = 22.5 kts. Complement, 8.

M.P.5. (1909). 9 tons. Dimensions: $50 \times 11\frac{1}{2} \times 5\frac{1}{2}$ feet. 1 M.G. Designed H.P. 50 = 9 kts. Complement, 8.

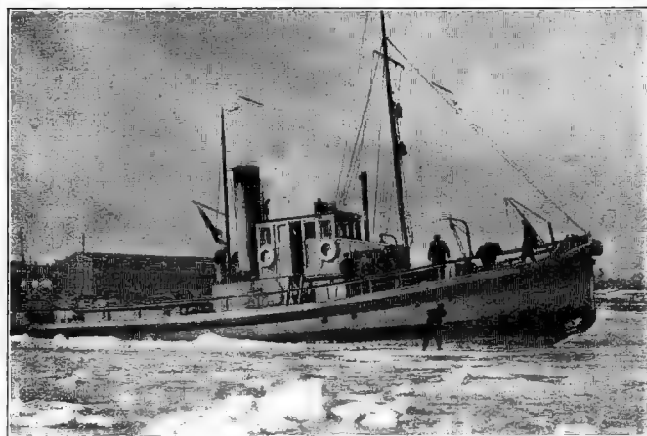
Naval Tugs and Tenders.



1929 Official Photo.

KOMPASS (1918). 300 tons. Dimensions: $143 \times 21 \times 12$ feet. Designed H.P. 220 = 9 kts. Complement, 20. Fitted for cable laying.

Naval Tugs and Tenders—continued.

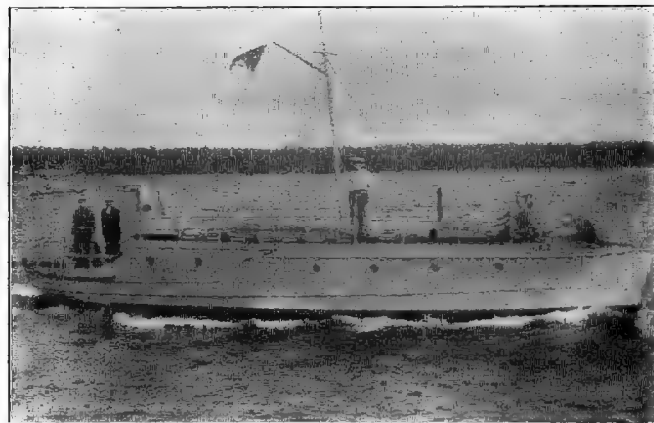


1929 Official Photo.

TALLIN. 120 tons. Dimensions: $80 \times 17 \times 10\frac{1}{2}$ feet. Designed H.P. 220 = 10 kts. Complement, 10.

SAKALA. 40 tons. Dimensions: $62 \times 11 \times 6\frac{1}{2}$ feet. Designed H.P. 40 = 8 kts. Complement, 6.

M.P.10. 24 tons. Dimensions: $55\frac{1}{2} \times 9\frac{1}{2} \times 3\frac{1}{2}$ feet. Designed H.P. 100 = 13.5 kts. Complement, 6.



1929 Official Photo.

M.P.8., M.P.14., M.P.23. (1909). 12 tons. Dimensions: $53 \times 13 \times 6$ feet. Designed H.P. 55 = 9 kts. Complement, 6.

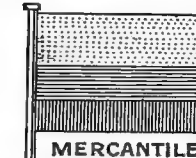
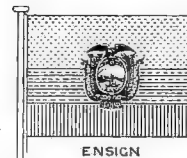
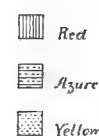
Icebreakers.

SUUR TÖLL (ex-Vainamoinen) (4800 tons), **TASUJA** (1100 tons), and **JÜRI VILMS** (200 tons), are in peace-time all under the control of the Government Shipping Department.

MISCELLANEOUS.

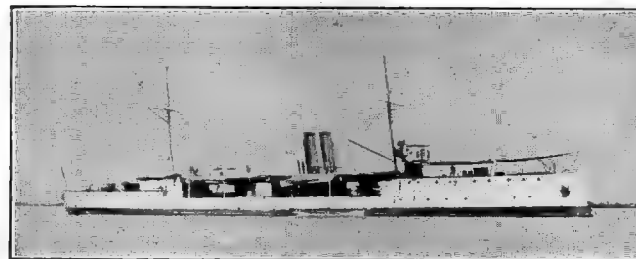
Miscellaneous—ESTONIA ECUADOR

ECUADOR.



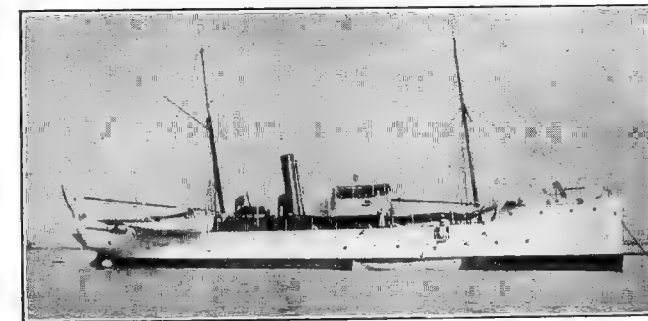
Flag Notes: The upper half of flag is corn yellow; the lower half is equally divided into two stripes, the upper one of pale blue and the lower one of red. The emblem in the centre of the flag differs from that of the Colombian Flag.

Gunboats.



1918 Photo, G. Chambers, Esq.

LIBERTADOR BOLIVAR (ex *Alm. Simpson*, 1896, purchased from Chile, 1907). Displacement 750 tons. Length, 240 feet. Beam, $27\frac{1}{2}$ feet. Maximum draught, $10\frac{1}{2}$ feet. Guns (Armstrong): 4—3 pdr., 2 Maxims. Torpedo tubes (18 inch): 3 above water. Armour (Harvey): 1" Belt, $4\frac{1}{2}$ " Gun shields, 1" Hood to steering gear, 1" Bulkheads. Machinery: 2 sets triple expansion. 2 screws. Boilers: 4 Normand. Designed I.H.P. forced 4500 = 21.5 kts. Coal: 100 tons. Built by Laird.



1918 Photo, G. Chambers, Esq.

COTOPAXI (1884). 300 tons. $135 (r.p.) \times 21 \times 9$ feet. Guns: 2—3 pdr. small Q.F. I.H.P. 175. Max. speed, $10\frac{1}{2}$ kts.

FINNISH FLEET.

Revised 1928 by courtesy of Commander A. Raninen, Finnish Navy.

Revised Shipbuilding Programme 1925-29

provided for:—

- 2 Gunboats. 4 Coastal Motor Boats.
- 4 Submarines. 1 Training Ship.

Tenders for 2 Coast Defence Ships were invited in Autumn of 1928 and orders are understood to have been placed with Crichton Yard, Abo, in 1929. Main armament will consist of 4—10 inch Bofors guns.

Minister of Defence: Mr. Niukannen.

Personnel: About 1300 officers and men.

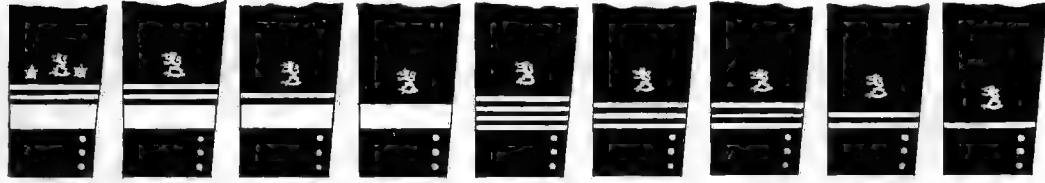
Commanding Officer, Naval Forces: Commander A. A. Virta.

British Naval Adviser: Lieut.-Commander M. C. Despard, D.S.C., R.N. (retd.).

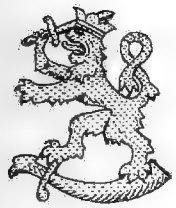
Uniforms:

(a)= Finnish Rank; (b)=British Rank.

Should be three thin stripes and no stars beside lion.



- (a) Amiraali. (b) Admiral.
- (a) Varti-Amiraali. (b) Vice-Admiral.
- (a) Kontra-Amiraali. (b) Rear-Admiral.
- (a) Kommodori. (b) Commodore.
- (a) Komentaja. (b) Captain.
- (a) Komentaja-Kapteeni. (b) Commander.
- (a) Kapteeni-Liutnantti. (b) Lieut-Commr.
- (a) Liutnantti. (b) Lieutenant.
- (a) Aliluutnantti. (b) Sub-Lieut.



The figure over top stripe is the Lion of the Finnish Arms, as enlarged sketch reproduced herewith. Colour of cloth between stripes:—

Engineers: red; Paymasters: silver stripes and no Lion badge; Surgeons: white; Army officers in Naval service: green. Reserve officers have no Lion badges.

Naval Ordnance.

- Schneider-Cunet: 101 m/m, (2·9 inch), 50. cal.
- Hotchkiss: 47 m/m, (1·85 inch, 3 pdr.)
- Torpedoes.
- Model 1912: 45 c/m, (17·7 inch).

Same marks as Russian Navy.

Wireless.

Marconi and Telefunken systems used.

Colour of Ships.

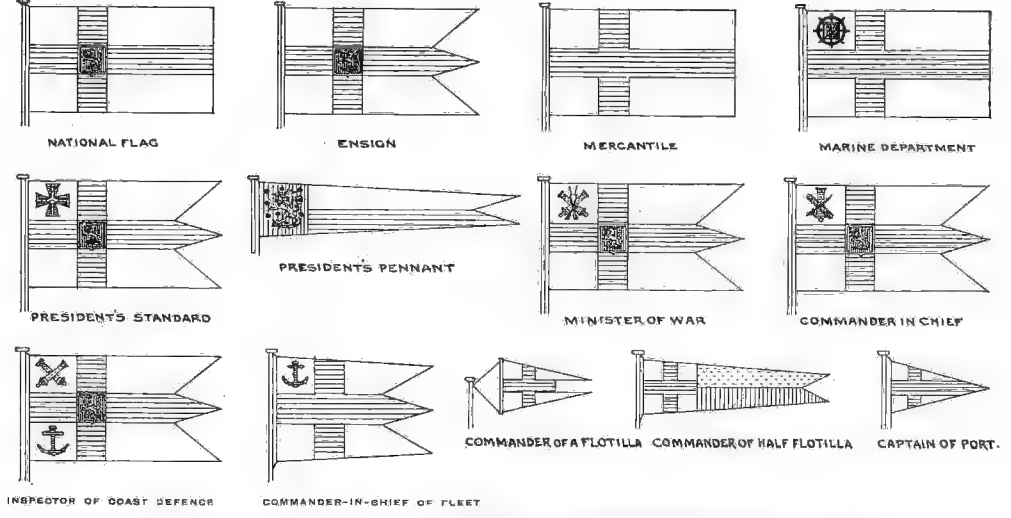
Grey.

Mercantile Marine.

(From "Lloyds Register," 1929 figures).

Total Gross Tonnage, 293,323.

Flags:—



NOTE:— THE LION IN THE FLAGS IS SIMILAR TO THAT SHOWN ENLARGED FOR THE UNIFORMS. IN THE FLAGS THERE ARE 9 CONVENTIONAL ROSES DISPOSED ABOUT THE LION.

- Red White Blue Yellow (Azure)



SVEABORG

HÄMEENMAA.
UUSIMAA.

KARJALA.*
TURUNMAA.*

TORPEDO CRAFT.



M1*



S1*.

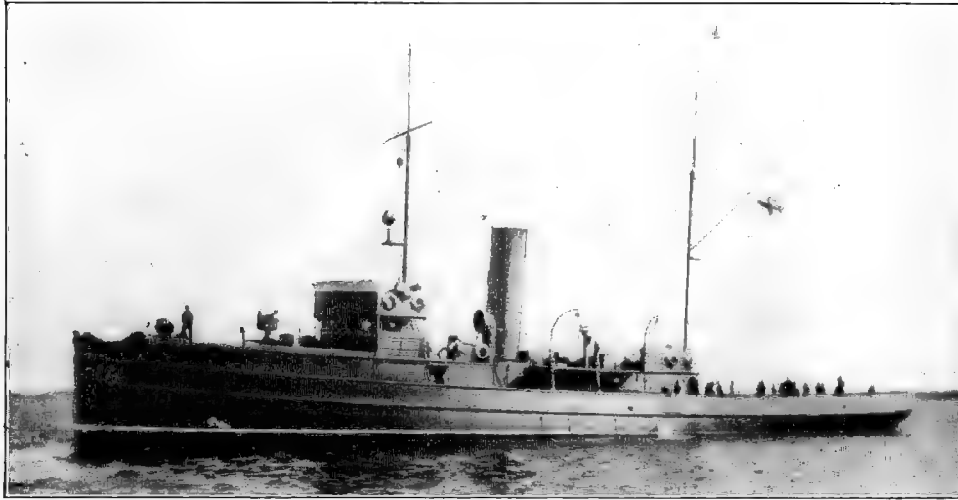
S5 Same appearance but (a) Foremast stepped abaft fore bridge. (b) No high ventilator before third funnel.



KLAS HORN.*
MATTI KUUKI.*

*These Silhouettes reproduced from official drawings furnished by courtesy of the Ministry of Defence.

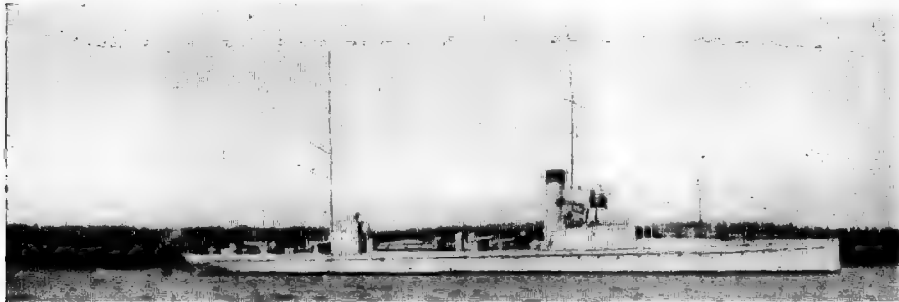
Patrol Vessels.



1924 Photo, Lieut.-Com. Raninen.

KARJALA (ex-Russian *Filin*), **TURUNMAA** (ex-Russian *Orlan*), built by Crichton A/B, Abo. Ordered by late Imperial Russian Government, 1914. Launched, 1918. Displacement: 342 tons. Complement, 48. Length, (p.p.) 154 feet, (o.a.) 164½ feet. Beam, 22½ feet. Designed load draught, 7½ feet. Guns: 2—11 pdr., 3 M.G. Machinery: 2 sets triple expansion. Boilers: Yarrow. Designed I.H.P. 1150 = 15 kts. Coal capacity about 50 tons.

Notes.—“Borowski type” Patrol Vessels and generally sisters to Polish *M. Pilsudski* and *Gen. Haller*. *Turunmaa* is employed as Cadets’ Training Ship.



1921 Official Photo.

MATTI KURKI (ex-Russian *Posadnik*), **KLAS HORN** (ex-Russian *Voevoda*), both built by Schichau, Elbing, 1892. Displacement: 420 tons. Complement, 62. Length, (p.p.) 187¾ feet. Beam, 23 feet. Draught, 10½ feet. Guns: 2—3.9 inch, 2—3 pdr. Hotchkiss, 3 M.G. Machinery: 1 set triple expansion. Boilers: Locomotive type. Designed H.P. 3300 = 20 kts. Best present speed about 16 to 17 kts. Coal: about 80 tons. Can carry 50 mines each.

Notes.—Built for late Imperial Russian Navy as Torpedo Craft but re-rated as Patrol Vessels. On the outbreak of the Russian Revolution they were abandoned by their crews at Finnish Ports and taken over for the Finnish Navy.

2 Torpedo Boats.



S.1.

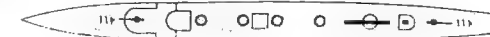
1924 Photo, Lieut. Com. Raninen.



S.5

1921 Official Photo.

2 Yarrow type: **S1** (ex-Russian *Ryani*, 1899), **S5** (ex-Russian *Podvishni*, 1901). Displacements: *S 1*, 250 tons; *S 5*, 270 tons. Lengths, (p.p.) 180 feet for *S 1* and 190 feet for *S 5*. Beam, 18½ feet. Draughts, about 5½ feet mean, and 7½ feet max. Guns: 2—11 pdr. and 3 M.G. Torpedo tubes: 1—17.7 inch. As Russian craft, were fitted to carry and lay 14 or 18 mines. Machinery: 2 sets triple expansion. Boilers: 4 Yarrow. Designed I.H.P. 3800 = 27 kts. Coal: 72 tons. Sister boat, *S 2* foundered in heavy weather, Oct., 1925.



3 or 4 Submarines.

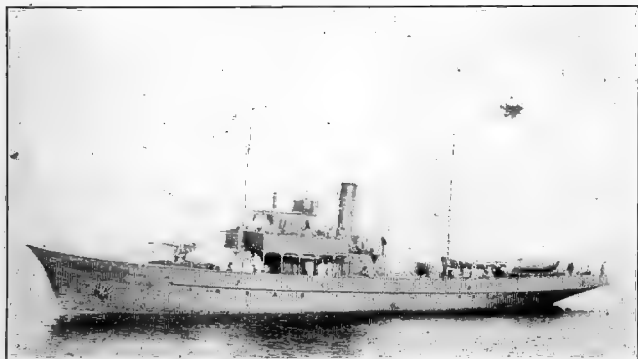


SV1—SV3. Ordered 1926 from the Crichton-Vulcan Yard at Turku, Abo, the first keel being laid in Sept., 1926, other two early in 1927. Displacement, 450 tons. Dimensions: 164 (o.a.) × 19½ × feet. To be capable of diving to 40 fathoms.

Note.—An order for a fourth Submarine is understood to have been given in 1929.

FINLAND—Miscellaneous.

Mine Sweepers.



1924 Photo, Lieut.-Com. Raninen.

T.2 (1916) and **RAUTU** (ex Russian *Murman*, 1917). Displacement: 240 tons. Complement, 22. Dimensions: 143 (p.p.) \times 20 \times — feet. Guns: 1—11 pdr., 2 M.G. Machinery: 2 sets triple expansion. Designed H.P. 550=14 kts. Coal: 30 tons.

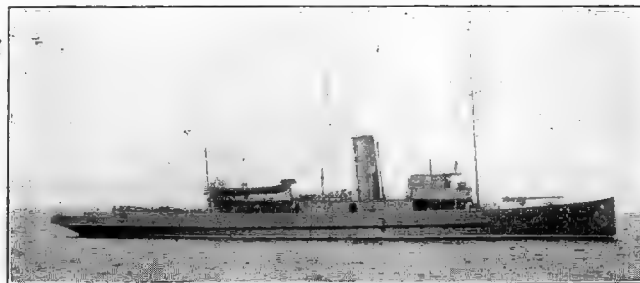


1921 Official Photo.

18 "A-boats": Numbered between *A.11—A.53*. Fitted as Mine Sweepers. Displacement: 9 tons. Complement, 8. Dimensions: 50 (p.p.) \times 11½ \times — feet. Engines: Petrol motor. Designed H.P. 50=9 kts. All still in service, 1927.

MISCELLANEOUS.

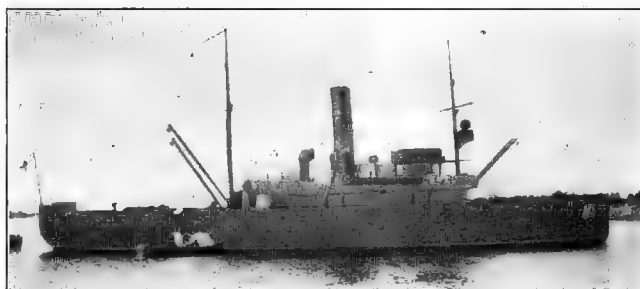
Minelayers.



HÄMEENMAA.

1924 Photo, Lieut.-Com. Raninen.

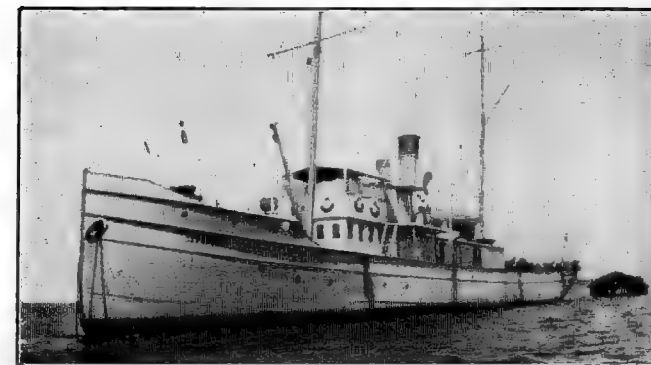
UUSIMAA (ex *Beo*, 1918). **HÄMEENMAA** (ex *Wulf*, 1918). Displacement: 400 tons. Complement, 32. Dimensions: 160 (p.p.) \times 24 \times 10 feet. Guns: 2—3·9 in., 1—37 m/m. AA., 2 M.G. Machinery: 2 sets triple expansion. Designed H.P. 1000=15 kts. Coal: 100 tons.



1924 Photo, Lieut.-Com. Raninen.

M.1. (ex *Voin*, Kolomna, 1916.) Displacement, 776 tons. Complement, 41. Dimensions: 151 (p.p.) \times 26½ \times 7½ feet. Guns: 2—3 pdr. Machinery: 1 set triple expansion. Designed H.P. 800 = 12 kts. Coal: 50 tons.

Minelayers—continued.



1925 Photo, Lt.-Cr. A. Raninen, F.N.

SVEABORG (Maskin & Bro. A/B. Helsingfors, 1905). Displacement, 780 tons. Complement, 36. Dimensions: 143½ \times 20 \times 8½ feet. Guns: Nil. Designed H.P. 300=10 kts. Coal: 30 tons. Carries 60 mines.

Motor Launches.

M.T.3—M.T.5 (1928). Usual Thornycroft 55 ft. type. Armament: 2—18 inch torpedoes, 2 Lewis guns, 2 D.C. Speed: 40 kts. 2 more of this type have been ordered in Finland. One will be built at Turku, one at Porvoo.



1924 Photo, Lieut.-Com. Raninen.

M.T.V. 1 and M.T.V. 2 (ex *M.A.S. 220 and 221*.) Built for Royal Italian Navy by Flli. Orlando in 1917, and purchased 1920. 12 tons. Dimensions: 52½ \times — \times 3½ feet. Guns: 2 M.G. on high-angle mounts. Torpedoes: 2—17·7 inch carried in dropping gears on each beam. Machinery: 2 sets petrol motors. B.H.P. 500=26·5 kts.

Icebreakers.

The Government Icebreakers **JAAKARHU**, **SAMPO**, **TARMO**, **VOIMA** and **MURTAJA** would be available for naval use in wartime, but are no longer listed here, as they are under the control of the Board of Navigation.

FRANCE.

FRANCE

NOTE.—The following pages, descriptive of the French Navy, have been inspected and approved by the Ministry of Marine, Paris, 1929, though the Ministry of Marine accepts no responsibility for the accuracy of any of the statements made in "Fighting Ships" as regards the French Navy.

Minister of Marine—Monsieur Georges Leygues.

Naval Attaché (London)—Capitaine de Vaisseau Comte de Ruffi de Pontevéz-Gévaudan, D.S.O.

Asst. Naval Attaché—Capitaine de Corvette (Constructive Branch) M.F.P.M. Salmon-Legagneur.

" " " *Aéronautique*—Lieut. de Vaisseau L.M.P. A. Sala.

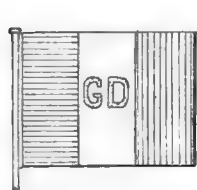
Navy Estimates.

1928, Frs. 2,552,000,000. 1927, Frs. 1,805,000,000.

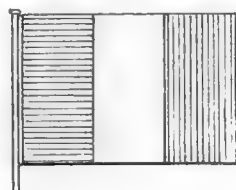
Flags.

Drawings prepared 1924 from information furnished by courtesy of the Ministry of Marine, Paris.

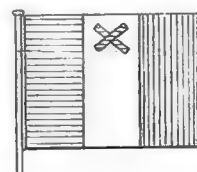
Presidential Flag: Initials of the President worked in Gold letters on central (white) stripe of the Ensign, the letters and their dimensions being chosen by M. le Président.



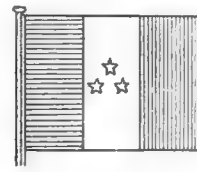
Pavillon du Président
de la République.



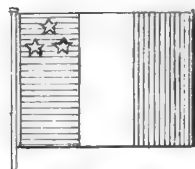
Ensign & Jack
(Minister of Marine).



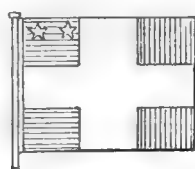
Maréchal de France.



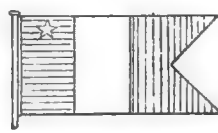
Vice-Amiral
Chef d'Etat Major
Général
ou Inspecteur Général
des Forces Maritimes.



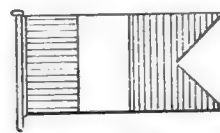
Autres Vice-Amiraux,
et Généraux de Division
en Mission Officielle,
ou pourvus d'un Com-
mandement en Chef.



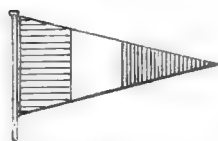
Contre-Amiral
et Général de Brigade
en Mission Officielle.



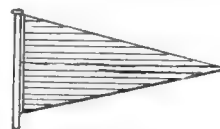
Capitaine de Vaisseau
Chef de Division
(indépendante ou en
sous ordre).



Capitaine de Vaisseau
Comm't un groupe de
bâtiments, ou
Major-Général ou
Commandant la Marine.



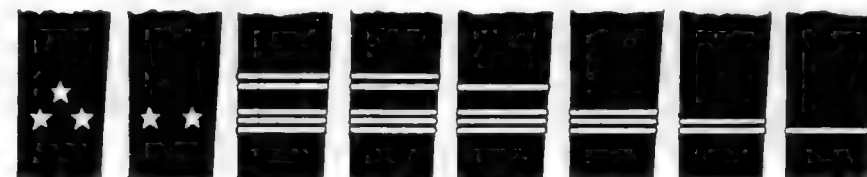
Capitaine de Frégate
ou de Corvette, Comm't
un groupe de bâtiments
ou Commandant la Marine.



Comm't supérieur
temporaire de tout
grade.



hydravions



Corresponding
to British

Vice-Amiral. Contre-Amiral. Capitaine de vaisseau. Capitaine de frégate. Capitaine de corvette. Lieutenant de vaisseau. Enseigne 2^e classe and Aspirant. Vice-Ad. Rear-Ad. Captain. Commander. Lieut. Comm'der. Lieut. (junior.) Sub-Lieut. and Midshipman.

Capitaine de Vaisseau, Chef de Division, has one star above the stripes.

Only three of the Capitaine de frégate's stripes are gold: the second and fourth are silver.

Epaulettes with parade uniform are of the usual sort, except that—

A Vice-Admiral's epaulettes have the usual anchor and 3 stars.

A Rear-Admiral's

Caps are similar to British Navy in shape but badge differs, being more like Italian and there is a gold band right round. The cocked hat carries the tri-colour.

Torpedoes. (Details official).

Whitehead pattern, made at Toulon Torpedo Factory; also at St. Tropez, where Whitehead marks are built by the Société Française de Torpilles Whitehead.

Date.	French Designation.	Diameter. inches.	Length. feet. ins.	Charge. lbs.	Pressure in chamber. lbs. per sq. in.	Maximum range.
1919	55 c/m (D)	21 7	27' "	551	2420	15,000
1919	55 c/m. (V)	21 7	21' 7"	551	2200	4375
1912	45 c/m long	18	22' 2"	317	2420	8000
1911	45 c/m short	18	17' 3"	317	2140	1000
1909	45 c/m cold	18	16' 8"	317	2140	2000

Notes.—All fitted with gyros. There is believed also to be a 1922 model of the 55 c/m. torpedo.

Mines.

9 marks in use up to 1914, but present types understood to include mainly 120 and 200 kilo. types for laying by S/M; 360-kilo. Sautter-Harlé spherical and 700-kilo. Breguet spherical types. Paravanes British marks.

General Notes.

COLOUR OF SHIPS: *Big ships.*—Grey all over, but some have grey-green or greenish-brown turrets, or black barbette shields.

Destroyers, etc.—Light grey; Flotilla Leaders and Destroyers, also Submarines of *Requin* class, bear distinguishing numbers instead of letters as formerly.

Submarines.—Sea green or light grey.

EFFECTIVE LIFE OF SHIPS: Fixed in 1923 as—Battleships and Aircraft Carriers, 20 years; Cruisers, 17 years; Torpedo Craft, 15 years; Submarines, 12 years—all reckoned from date of first commissioning for trials.

Washington Treaty standard has been adopted for regulation of displacements. Those given for ships built since its conclusion do not therefore include normal fuel or reserve feed water.

Mercantile Marine.

(From "Lloyd's Register," 1929 figures.)

Total gross tonnage, 3,378,663.

Naval Ordnance (converted from official 1919 Table furnished by courtesy of the Ministry of Marine and officially revised in 1927).

Calibre (ins.)	13.4		12		9.4	8	7.6			6.5			6.1	5.5			5.1		3.9	
Do. (c/m)	34		30.5		24	20.3	19			16			15.5	138			13		10	
Mark	1912		906-10	1906	1902-6	1924	1902	1893-6	1893	'93-'96M	1893-6	1893	1920	1923	1910	1893	1924	1919	1917	'91 &'93
Length (calibres)	45		45	45	49.5	50	50	40	40	45	45	45	50	40	55	45	40	40	—	45
Weight of Gun (English tons) }	65.33		54.7	54.7	29.1	20.4	14.9	12.5	10.2	7.96	7.96	6.52	8.72	4.05	5.17	4.01	3.42	4.34	1.54	1.67
Weight of Shell (capped) in lbs. }	A.P. 1190.5	Capped 1256.6	922.3	960.4	487.2	271.4	199	199	199	121	121	121	123.5	88.2	80.5	84	70.5	70.5	29.7	35.5
Weight of Charge (lbs.) }	330.7	337.3	267.4	282.2	148.1	116.8	84	74.5	49.2	45.6	43.7	28.9	43.2	19.8	22.7	16	17	17	8.16	8.16
Max. Pressure (lbs.) }	59,525	57,320	57,320	57,320	57,320	46,000	59,083	61,739	47,400	47,400	61,739	44,092	42,900	35,500	55,155	53,706	34,500	34,500	5,291	5,291
Muzzle-Velocity (ft.-secs.) }	2624.7	2605	2559	2559	2625	2936	3117	2756	2526	2953	2838	2527	2854	2297	2723	2395	2408	2408	2362	2329
Remaining Velocity at	21,872 yds. 20,000 m. }	..	1309	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	16,404 yds. 15,000 m. }	1178	1462	..	..	1102	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	10,936 yds. 10,000 m. }	1473	1762	1529	1529	1348	1106	1010	992	928	918	922	..	..	860	905	..	..	879	856
	5468 yds. 5000 m. }	1640	2162	1992	1992	1896	1860	1571	1447	1417	1351	1257	..	..	1230	1168	..	..	1115	1033
Angle of descent at	20,000 m.	..	25° 10"	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	15,000 m.	21° 10"	14° 50"	..	..	25° 50"	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	10,000 m.	9° 30"	7° 35"	9° 25"	9° 25"	11° 10"	14° 10"	18° 10"	20° 50"	23° 20"	24° 30"	26° 30"	..	..	27° 30"	28° 40"	..	..	30° 20"	34° 10"
	5000 m.	3° 10"	2° 53"	3° 14"	3° 14"	3° 20"	3° 10"	4° 10"	5°	4° 20"	5° 10"	6° 20"	..	..	6° 10"	7° 20"	..	..	8° 10"	9° 20"

A new 95 m/m. (3.7 inch) anti-aircraft gun has lately been introduced, also a 37 m/m. A.A. (model 1925).

RECOGNITION SILHOUETTES.

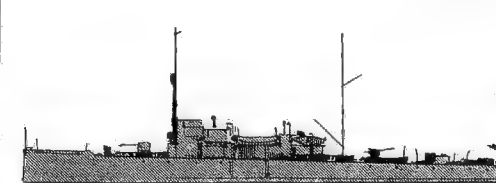
One Funnel or none.

FRANCE.

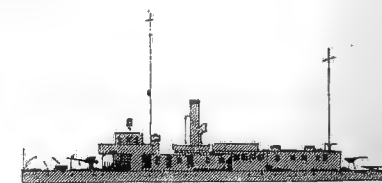
Summary of Current Naval Programme.

Class of Ship.	Year 1922. (Law of April 18).	Year 1923. (Law of May 20).	Year 1924. (Law of April 22).	Year 1925. (Law of July 23).	Year 1926. (Law of Aug. 24).	Year 1927. (Law of Dec. 25).	Year 1928. (Law of Dec. 30th, 28, Mar. 29th '29).
CRUISERS { 10,000 tons { 8,000 tons	3 <i>Duguay-Trouin</i>	...	2 <i>Tourville</i>	1 <i>Suffren</i>	1 <i>Colbert</i>	1 <i>Foch</i>	1
FLOTILLA LEADERS { 2,700 tons { 2,400 tons	6 <i>Chacal</i>	...	...	3 <i>Guépard</i>	3 <i>Vauban</i>	6	6
DESTROYERS { 1,500 tons { 1,455 tons	12 <i>Simoun</i>	...	6 <i>L'Adroit</i>	4 <i>Boulonnais</i>	4 <i>Forbin</i>	...	...
SUBMARINES:							
Cruiser type, 3,250 tons	...	...	...	...	1 <i>Surecouf</i>	...	...
1st class { 1,560 tons { 1,150 tons	6 <i>Requin</i>	3 <i>Requin</i>	2 <i>Rédoutable</i>	7 <i>Pascal</i>	5 <i>Aetion</i>	5	6
2nd class ... 600 tons	6 <i>Ariane</i>	6 <i>Ariane</i>	...	...	4 <i>Argonaute</i>	4 <i>Amphitrite</i>	4
Minelaying type, 760 tons	...	...	...	2 <i>Saphir</i>	2 <i>Nautilus</i>	1	1
AIRCRAFT CARRIERS AND TENDERS ...	1 <i>Béarn</i>	...	...	1 <i>Cdt. Teste</i>	...	...	...
MINELAYERS ...	...	...	...	1 <i>Pluton</i>	...	...	...
SUBMARINE DEPOT SHIPS	...	...	...	...	1 <i>Jules Verne</i>	...	...
OILERS ...	...	...	1 <i>Le Loing</i> (voted April 5th)	...	2 <i>Le Mékong</i>	...	2
TRAINING SHIPS ...	...	...	...	...	1	...	...
SLOOPS ...	...	...	...	...	...	2	2

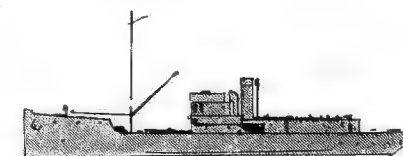
Note.—Grateful acknowledgments are tendered to the Editor of *Flottes de Combat* for much assistance in the preparation of this table.



DILIGENTE
ENGAGEANTE (Dummy funnel)
LURONNE } (Yacht stern)
SURVEILLANTE } (Minesweepers).



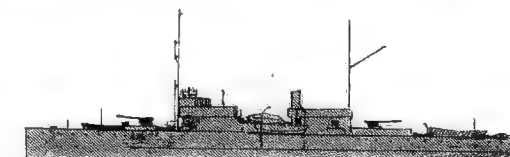
ARCUS, VIGILANTE (River Gunboats.)



J. COEUR & CHAMPLAIN (Transports).



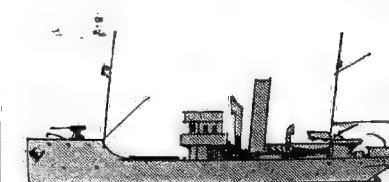
ALIDADE type (Surveying Vessel).



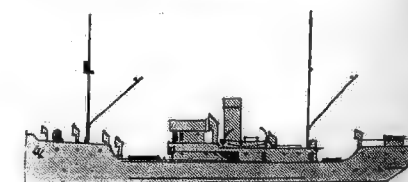
VAILLANTE class (Minesweepers).



DUNKERQUE class (Despatch Vessels.)

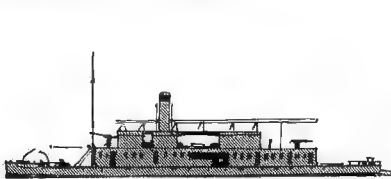


PASSEREAU, FAUVETTE (Patrol Vessels.)

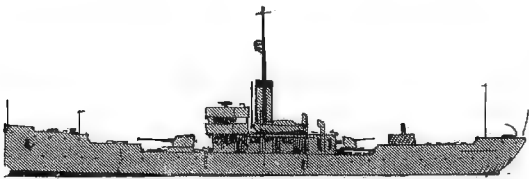


COËTLOGON class (Transports.)

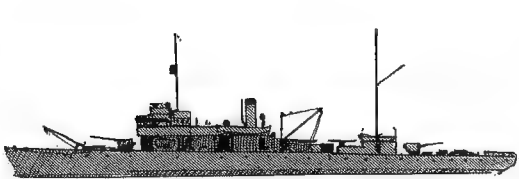
ONE FUNNEL—continued.



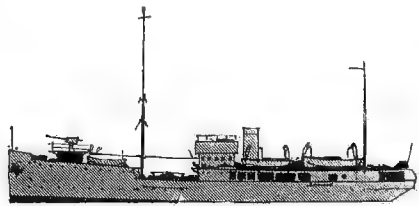
DOUDART DE LAGRÉE (*River Gunboat.*)



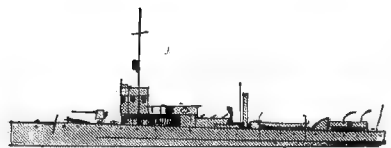
DUBOURDIEU class (5) (*Gunboats.*)



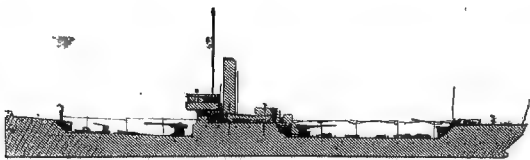
MEUSE
OISE
SOMME
YSER } (*Despatch Vessels.*)



LA PÉROUSE type (*Surveying Vessels.*)



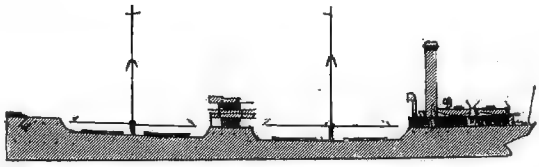
TROUPIER (*Patrol Boat.*)



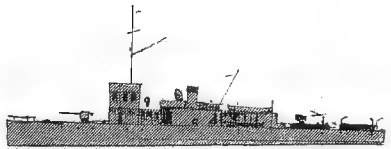
ARRAS class (*Despatch Vessel.*)



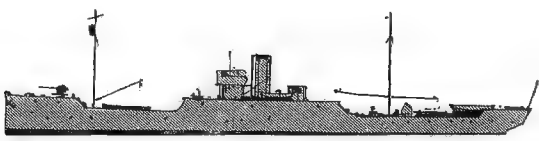
SUIPE
ANCRE
SCARPE (with Yacht bow) } (*Despatch Vessels.*)



RHONE (*Oiler.*)



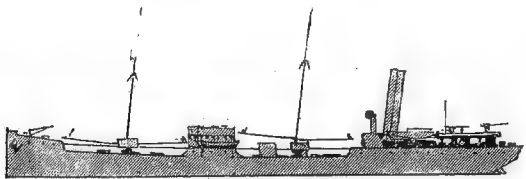
GRANIT
MEULIÈRE
MICA
PORPHYRE
QUARTZ } (*Minesweepers.*)



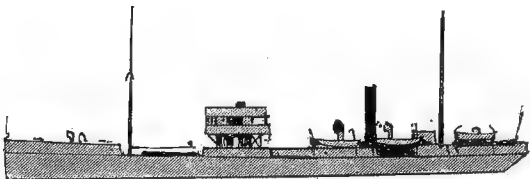
ESCAUT, AILETTE (*Despatch Vessels.*)



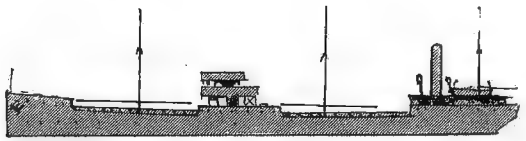
VILLE D'YS (*Despatch Vessel.*)



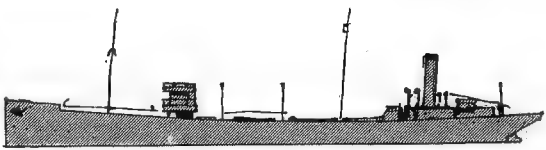
VAR (*Oiler.*)



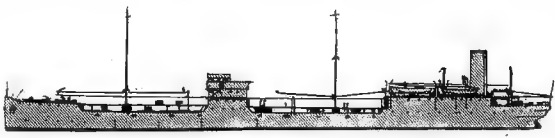
AUBE class (*Oilers.*)



GARONNE (*Oiler.*)

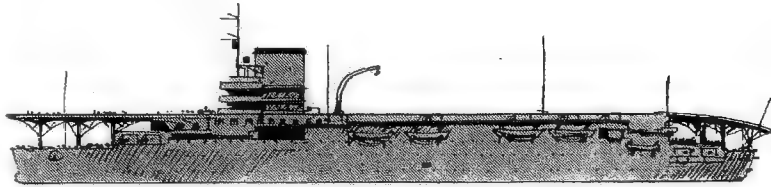


DORDOGNE (*Oiler.*)

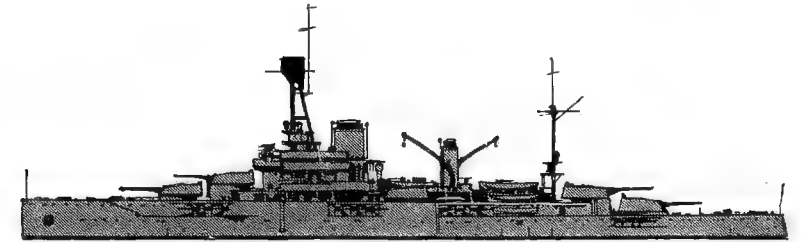


LE LOING (*Oiler.*)

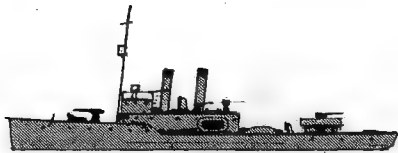
ONE or TWO FUNNELS.



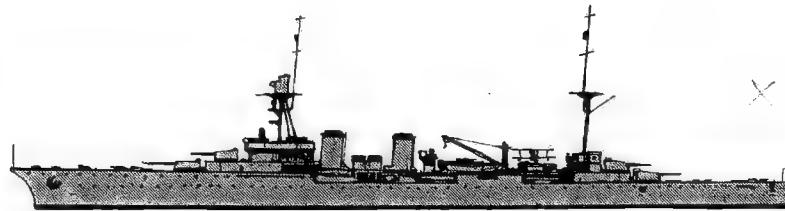
BÉARN (funnel on starboard side).



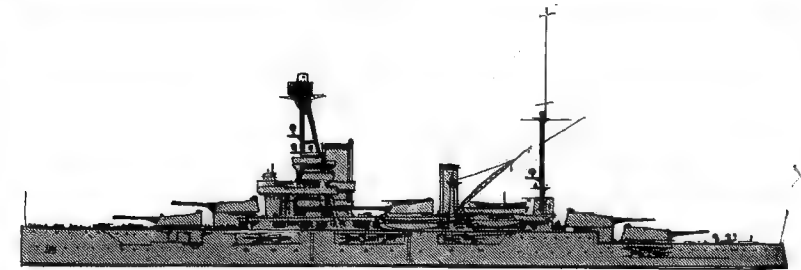
COURBET, JEAN BART.



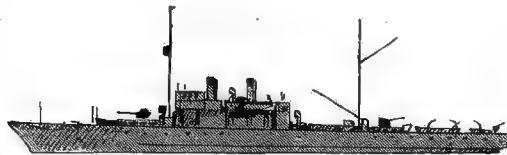
C 102-C 116 class (Submarine Chasers).



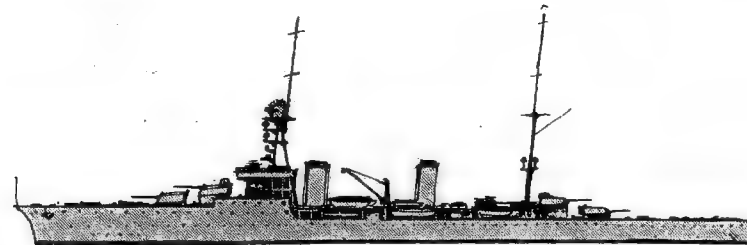
DUGUAY-TRUIN, LAMOTTE-PICQUET, PRIMAUGUET.



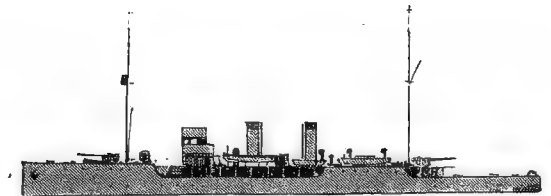
BRETAGNE.
PROVENCE.
LORRAINE



AISNE, MARNE. (Despatch Vessels.)



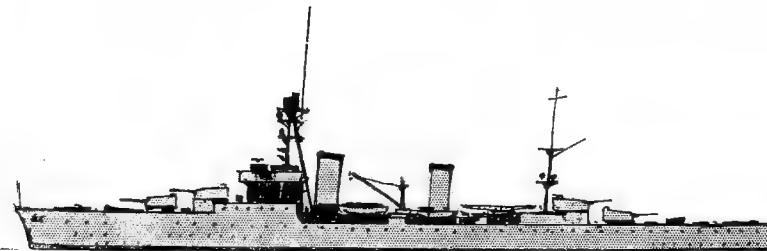
DUQUESNE, TOURVILLE.



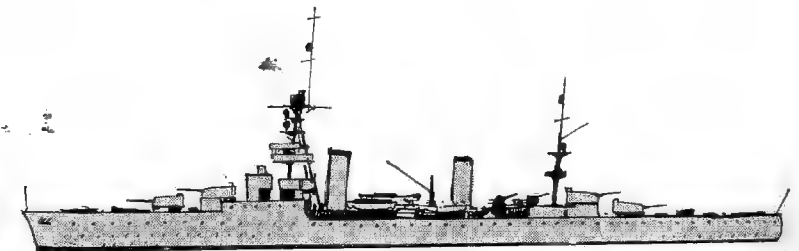
REGULUS type (Sloops).



ARDENT type (Despatch Vessels).

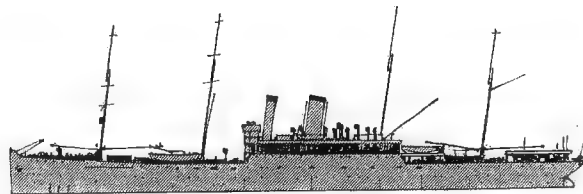


DUQUESNE, TOURVILLE.

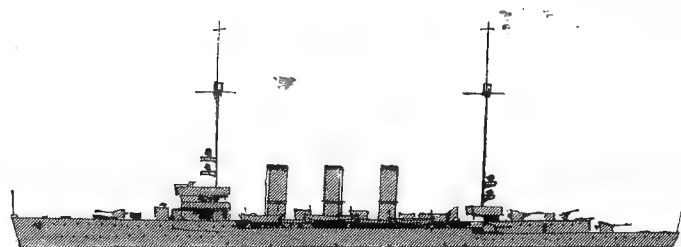


SUFFREN, COLBERT.

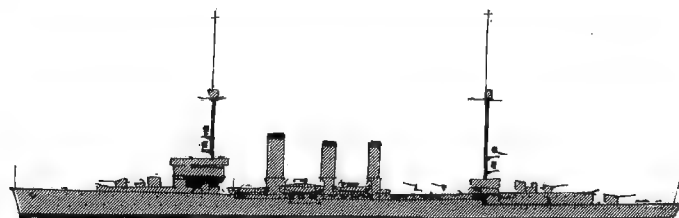
TWO to FOUR FUNNELS.



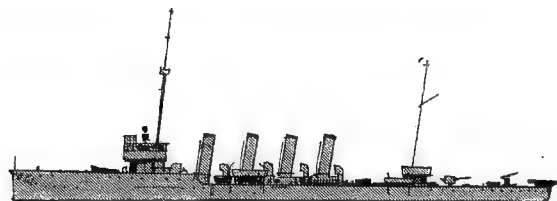
VULCAIN (*Repair Ship.*)



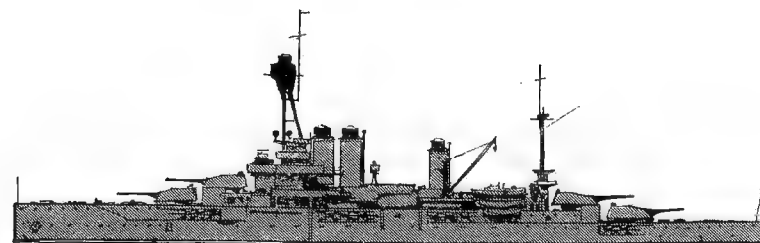
STRASBOURG.



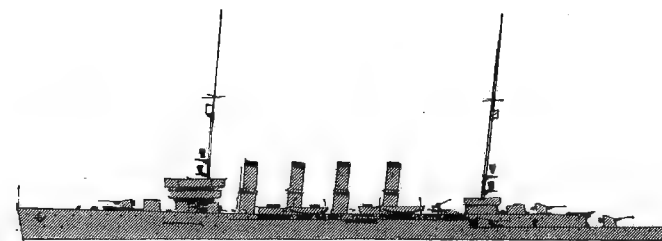
METZ.



THIONVILLE.



PARIS.



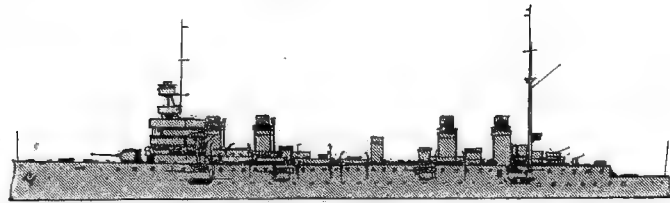
MULHOUSE.

Scale: 1 inch = 160 feet.

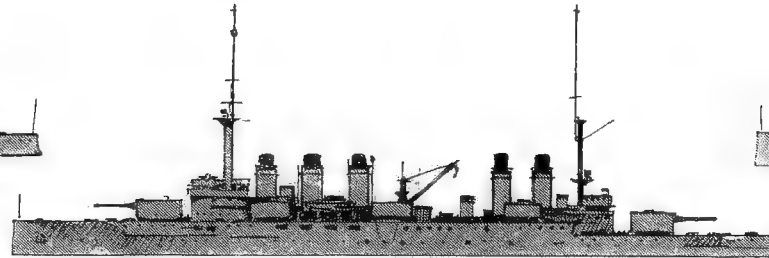
RECOGNITION SILHOUETTES.

Silhouettes—FRANCE

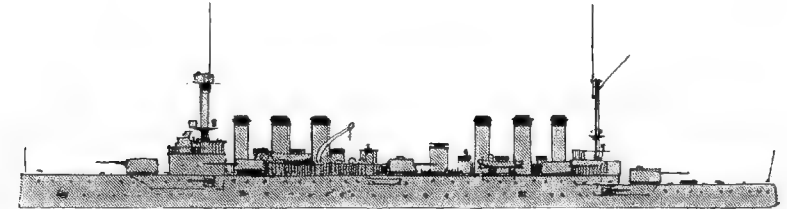
FOUR or SIX FUNNELS.



GUEYDON.



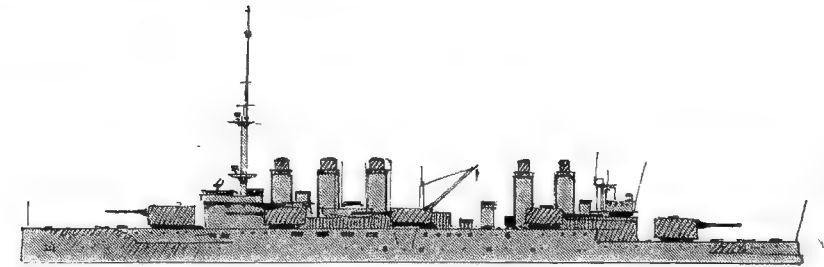
DIDEROT.



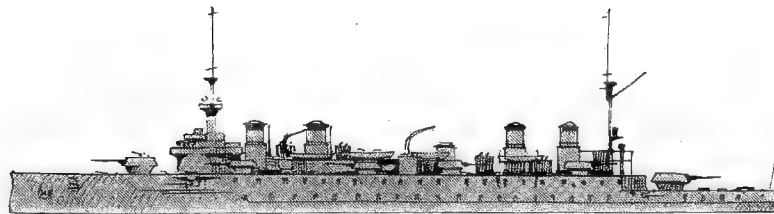
WALDECK-ROUSSEAU.



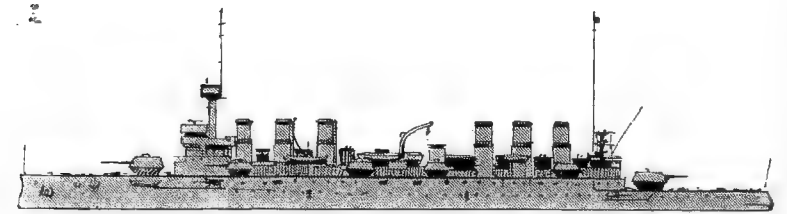
E. QUINET.
(Approximate appearance).



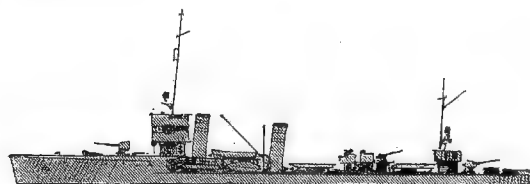
CONDORCET, VOLTAIRE.



J. MICHELET.



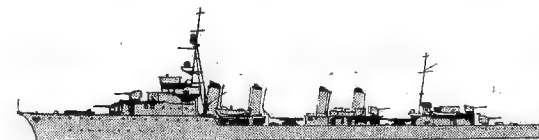
E. RENAN.



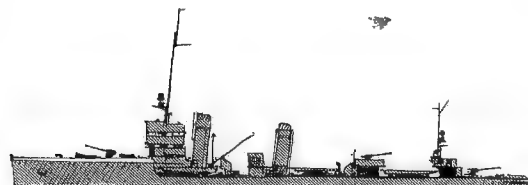
DELAGE, RAGEOT DE LA TOUCHE.



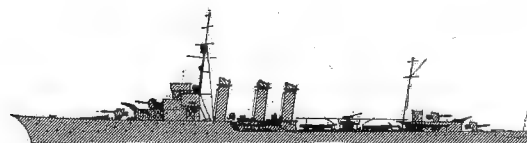
AVENTURIER, INTREPIDE.



GUÉPARD *type*.



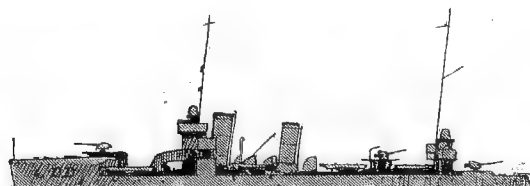
CHASTANG, DELIGNY, MAZARÉ, VESCO.



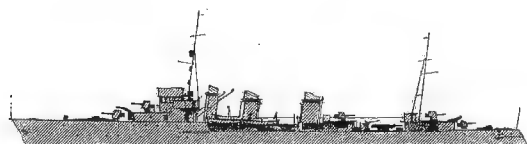
SIMON *type*.



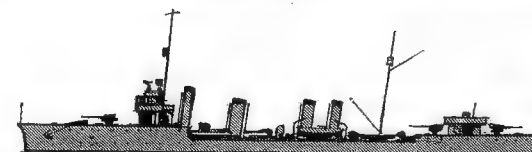
MAT. LEDIANC.



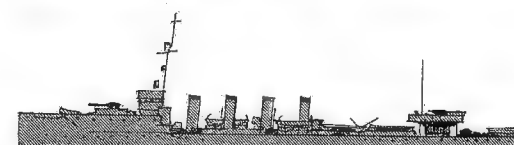
P. DURAND.



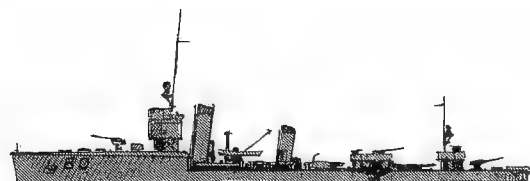
CHACAL *type* (Leaders).



OPINIÂTRE, TÉMÉRAIRE.



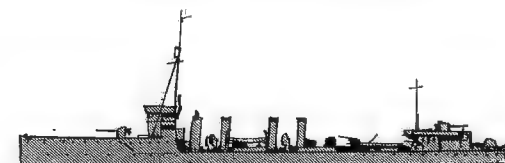
BORY *type*.
(Funnel heights and spacing vary.)



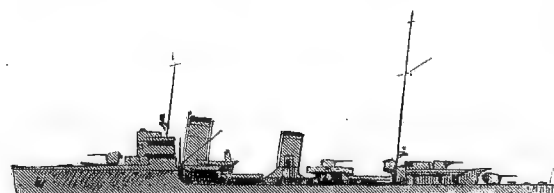
RUINO.



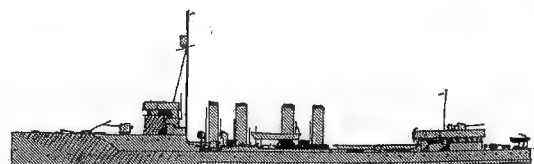
ALGÉRIEN *type*.



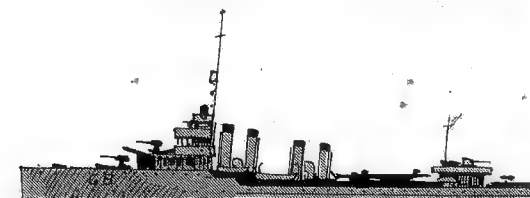
ENSEIGNE ROUX, MEC-PR. LESTIN.



AM. SÉNÈS, Leader.



C. LUCAS.



ENS. GABOLDE.

SUBMARINES.—



AMAZONE II, ARMIDE.



DAPHNÉ.



M. CALLOT.



BELLONE *type*.



FULTON, JOESSEL.



P. CHAILLEY.



DUPUY DE LÔME, LAGRANGE, LAPLACE,
RENAULT, ROMAZZOTTI, SANÉ,



R. AUDRY.



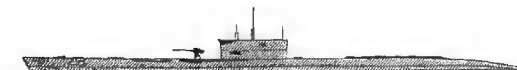
P. MARRAST.



J. CORRE, CARISSAN, TRINITÉ-SCHILLEMANS.



HALBRONN.



ONDINE *type*.



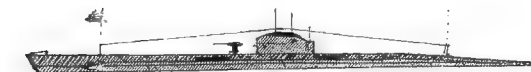
V. RÉVEILLE.



J. ROULIER *type*.



GUSTAVE ZÉDÉ, NÉRÉIDE.



REQUIN *class*.



H. FOURNIER, O'BYRNE.

FRANCE—Battleships. 1912 BATTLESHIPS. (Cuirassés de 1^{er} rang) (20 knots).

(BRETAGNE CLASS—3 SHIPS.)

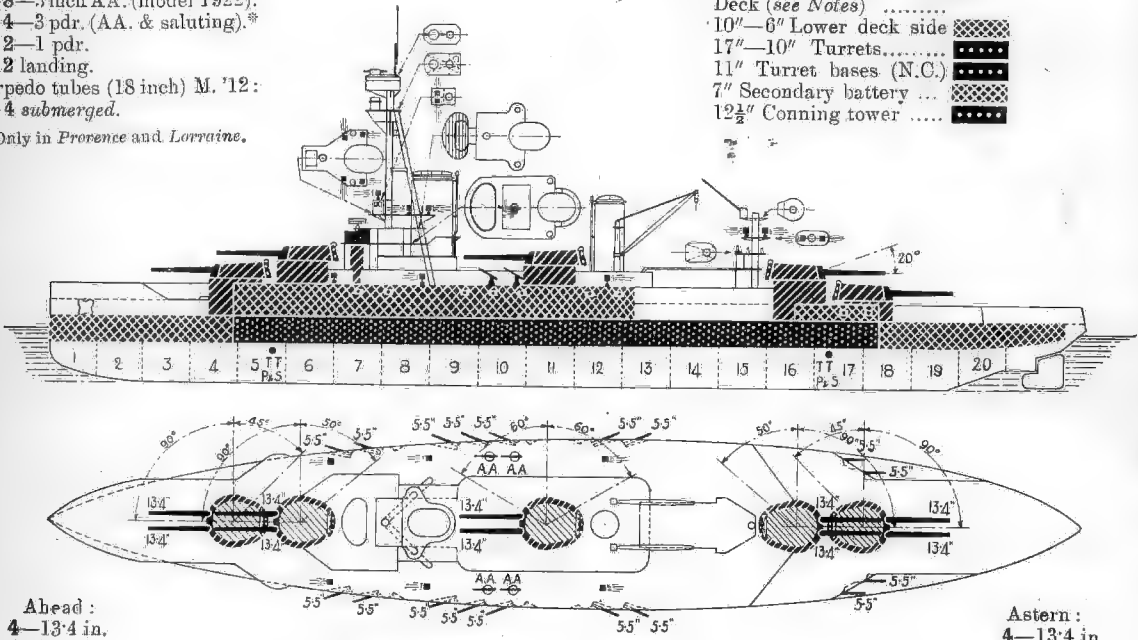
BRETAGNE (April, 1913), **LORRAINE** (September, 1913), **PROVENCE** (April, 1913).
Normal displacement, 23,550 tons. Complement, 1109 (+ 57 as Flagship).
Length (waterline), 541½ feet. Beam, 88½ feet. Maximum draught, 29 feet. Length over all, 544½ feet.

Guns (M. '12. Dir. Con.):
10—13·4 inch, 45 cal.
18—5·5 inch, 55 cal. (M. '10).
8—3 inch AA. (model 1922).
4—3 pdr. (AA. & saluting).
2—1 pdr.
2 landing.
Torpedo tubes (18 inch) M. '12:
4 submerged.

* Only in Provence and Lorraine.

Note.—Belt now ceases 10 metres short of bows, a transverse bulkhead having been inserted at this point.

Armour (chromo-nickel):
10½" Belt (amidships)
7" Belt (ends)
Deck (see Notes)
10"—6" Lower deck side
17"—10" Turrets
11" Turret bases (N.C.)
7" Secondary battery
12½" Conning tower

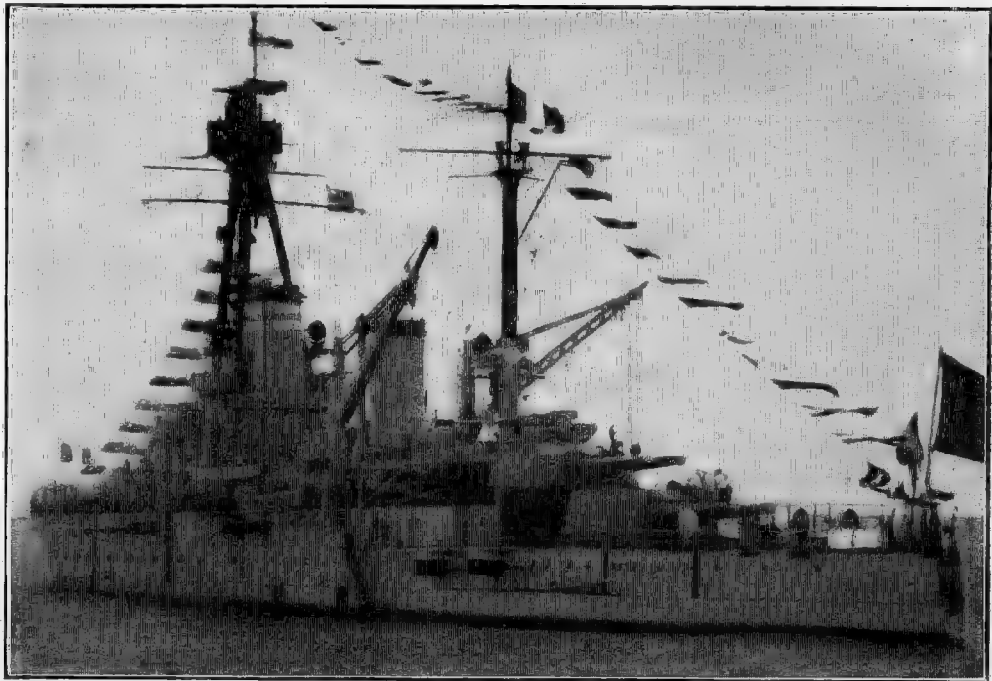


Ahead: 4—13·4 in. Astern: 4—13·4 in.
Broadside: 10—13·4 in., 9—5·5 in. 4—5·5 in.

Machinery: Parsons turbine. 4 screws. Boilers: see Notes. Designed H.P. 29,000=20 kts.
Coal: normal 900 tons; maximum 2680 tons. Also 390 tons oil.
*Gunnery Notes.—Carry 100 rounds per gun for 13·4 inch and 275 per gun for the 5·5 inch. Janney electro-hydraulic mountings to big guns. Special cooling for magazines—temperature 77° Fahr. Magazines can be completely flooded inside ten minutes. Height of guns above l.w.l.: 1st turret, 30½ feet; 2nd, 37½ feet; 3rd, 33½ feet; 4th, 28½ feet; 5th, 21½ feet. Arcs of training: Nos. 1 and 5, 270°; Nos. 2 & 4, 280°; No. 3, 120° either beam. Arcs of secondary guns: 120°. Big gun elevation increased from 18° to 23°; max range = 23,000 metres.
*Torpedo Notes.—8—36" and 2—30" searchlights. 4—200 h.p. dynamo. Torpedoes: 1912 Schneider, 6000 yards range. 24 carried. Also 30 blockade mines.
*Armour Notes.—Turrets of maximum thickness at ports, instead of uniform thickness as in J. Bart type. According to the 1917 Edition of "Flottes de Combat," the barbette shields are not of uniform design. Those for the end barbettes are 13·4" thick, for the super-firing barbettes 23" thick and for the central barbette 15½" thick. The double bottom is carried to the under side of protective deck. Main belt is 13½ feet wide, 5½ feet below and 7½ above l.w.l. Battery 197 feet long with 7 in. bulkheads. Protective decks: lower 2° slopes, 1½" flat. Upper, 1½" flat on top of belt.
*Engineering Notes.—Boilers: Bretagne, 24 Niclausse; Lorraine, 24 Belleville; Provence, 18 Guyot du Temple. Grate area: Bretagne, 2,090 sq. feet; Lorraine, 2,030 sq. feet; Provence, 1,492 sq. feet. Heating surface: Bretagne, 64,660 sq. feet; Lorraine, 63,700 sq. feet; Provence, 62,585 sq. feet. Pressure, 256 lbs. per sq. in. 300 turbine r.p.m. 2,700 tons coal in 13 bunkers, 390 tons oil in 4 tanks. Endurance: 4,700 miles at 10 kts. 2,800 at 18½ kts.

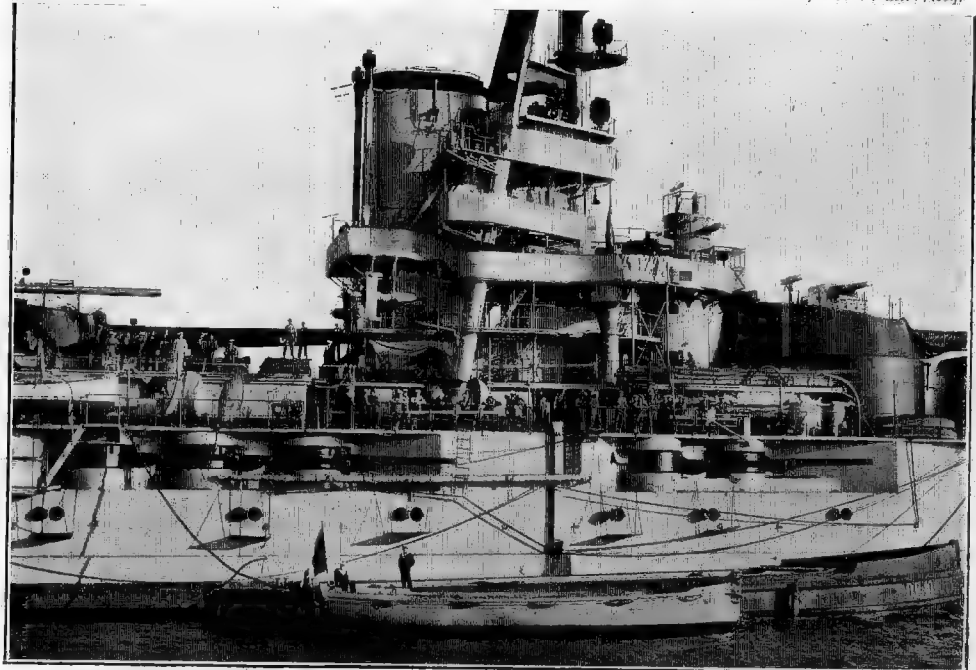
Name	Builder	Machinery	Laid down	Completed	Trials	Turbines	Boilers	Best recent speed
Bretagne	Brest	La Seyne	July '12	Sept. '15	21·4 kts.	Parsons Parsons Parsons	Niclausse Belleville D.T. Guyot	20·5
Lorraine	S. Nazaire (Pen.)	S. Nazaire (Pen.)	Nov. '12	July '16				
Provence	Lorient	La Seyne	June '12	June '15				

General Notes.—B., L. and P. belong to the 1912 programme, one of them being a replace ship for the Liberté, blown up September, 1911. Estimated cost, £2,908,000 per ship=£126 per ton. Bilge keels: 213×2½ feet. Bulkheads are longitudinal and transverse; latter solid amidships. All three ships have had stokeholds enlarged and magazines re-arranged. Lorraine taken in hand for extensive refit at Brest, Sept., 1929.
*Unofficial.



LORRAINE.

1928 Photo, W. A. Fuller, Esq.



BRETAGNE.

July, 1928 Photo, R. Perkins, Esq.

1912 FRENCH BATTLESHIPS.



LORRAINE. (Rig to be altered to that of *Bretagne*.)

July, 1928 Photo, Dr. Oscar Parkes.



PROVENCE. (*Bretagne* similar.)

Oct., 1927 Photo, Dussau (added 1928).

COURBET (Sept., 1911), **JEAN BART** (Sept., 1911), **PARIS** (Sept., 1912).

Normal displacement, 23,467 tons. Full load, 25,850 tons. Complement, 1108.

Length (p.p.), 541½ feet. Beam, 88½ feet. Maximum draught, 29 feet. Length over all, 544½ feet.

Guns (M. '06—10):

12—12 inch, 45 cal.

22—5·5 inch, 55 cal. (M. '10). } Dir.

4—3 inch AA. (M. 1922). } Con.

4—3 pdr. (may be AA.)

2—1 pdr.

2—landing.

Torpedo tubes (18 inch):

4 submerged.

*Mounted in pairs, on quarterdeck and forecastle, respectively.

Note to Plans.—32 feet of w.l. belt at extreme bow now removed, and athwartship bulkhead substituted.

Armour: (Chromo-nickel):

11½" Belt (amidships).....

7" Belt (bow) (N.C.)

7" Belt (aft) (N.C.)

2½" Deck

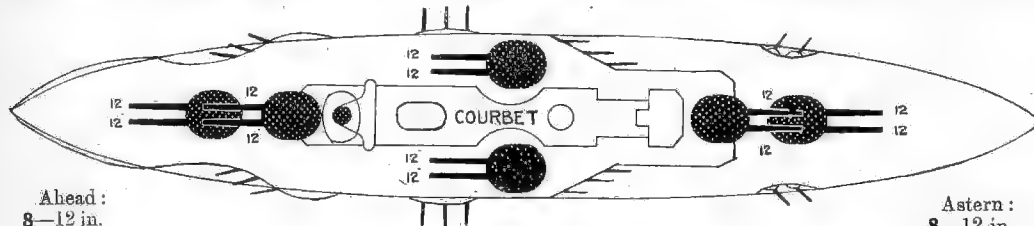
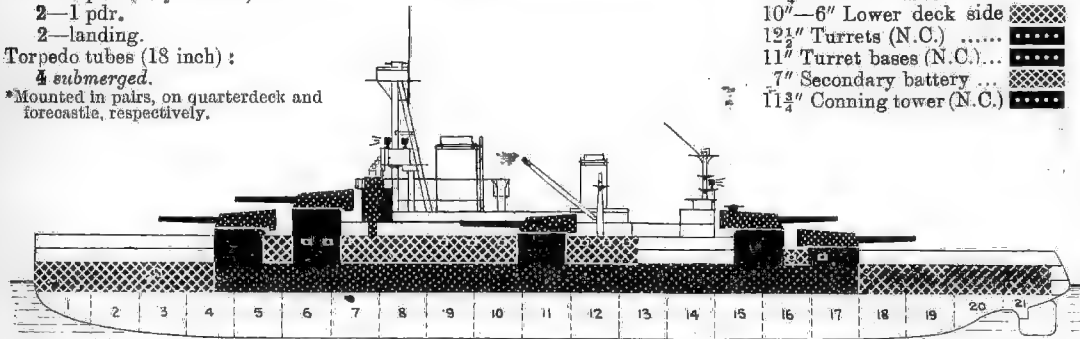
10"—6" Lower deck side

12½" Turrets (N.C.)

11" Turret bases (N.C.).....

7" Secondary battery

11½" Conning tower (N.C.).....



Ahead:

8—12 in.

6—5·5 in.

Astern:

8—12 in.

10—5·5 in.

Broadside: 10—12 in., 11—5·5 in.

Machinery: Parsons turbine. 4 screws. 24 Boilers: Belleville or Du Temple (see notes). Designed H.P. 28,000 = 20 kts. Coal: normal, 906 tons; maximum 2452 tons.; also 450 tons oil (two boiler rooms are fitted for oil burning). *Endurance — at 10 kts., 2700 at 18½ kts.

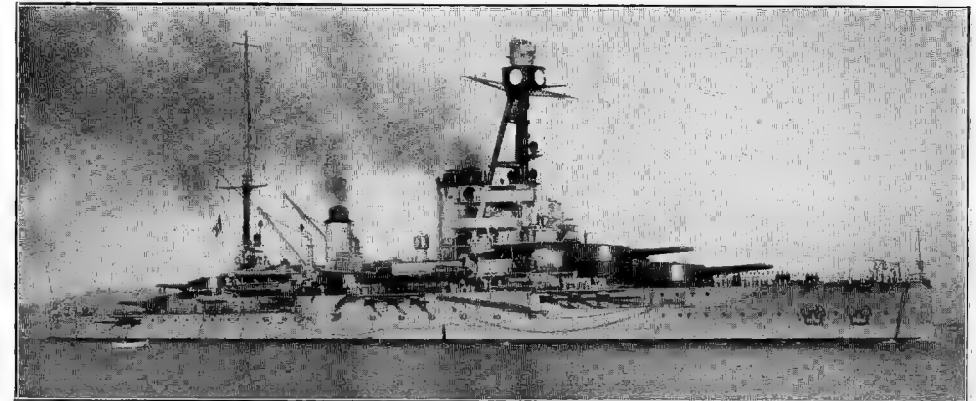
Armour Notes.—Belt, 13½ feet wide; 7½ feet of it above water, 5½ feet of it below. For about 325 feet it is 10½". Upper belt, 7" thick forms redoubt for secondary battery. The 4—5·5 inch aft. are in casemates. Prot. decks: 2½" curved from lower edge of belt to l.w.l. level. Above that a flat 1½" deck from end to end on top of main belt. Above again is a 1½" splinter deck against aerial attack. Conning tower is in three stories. 10½" communication tube. Two armoured fire control stations on top.

*Gunnery Notes.—Amidship 12 inch 180°, the centre line turrets 270° each. The 5·5 inch 120°. Elevation of guns reported increased to give range of 24,000 metres. Height of guns above water: Turrets (1) 30½ feet, (2) 37½ (amidships) 25 feet, (5) 28½ feet, (6) 21½ feet; upper-deck battery, 5·5 inch, 21½ feet; main deck, 5·5 inch aft, 11½ feet. Ammunition carried: 100 for each 12 in., 275 for each 5·5 inch, 300 for each 3 pdr. Westinghouse refrigerators in magazines. 77°F.

*Torpedo Notes.—8 searchlights (36 inch), also 2—30 inch. Carries 12 torpedoes and 30 blockade mines.

*Engineering Notes.—Pressure: 256 lbs. outer shafts: H.P. turbines; inner, L.P. Condensers (2): 32,076 sq. feet cooling surface. Turbines: 300 r.p.m. Belleville oil fuel system.

* Unofficial.

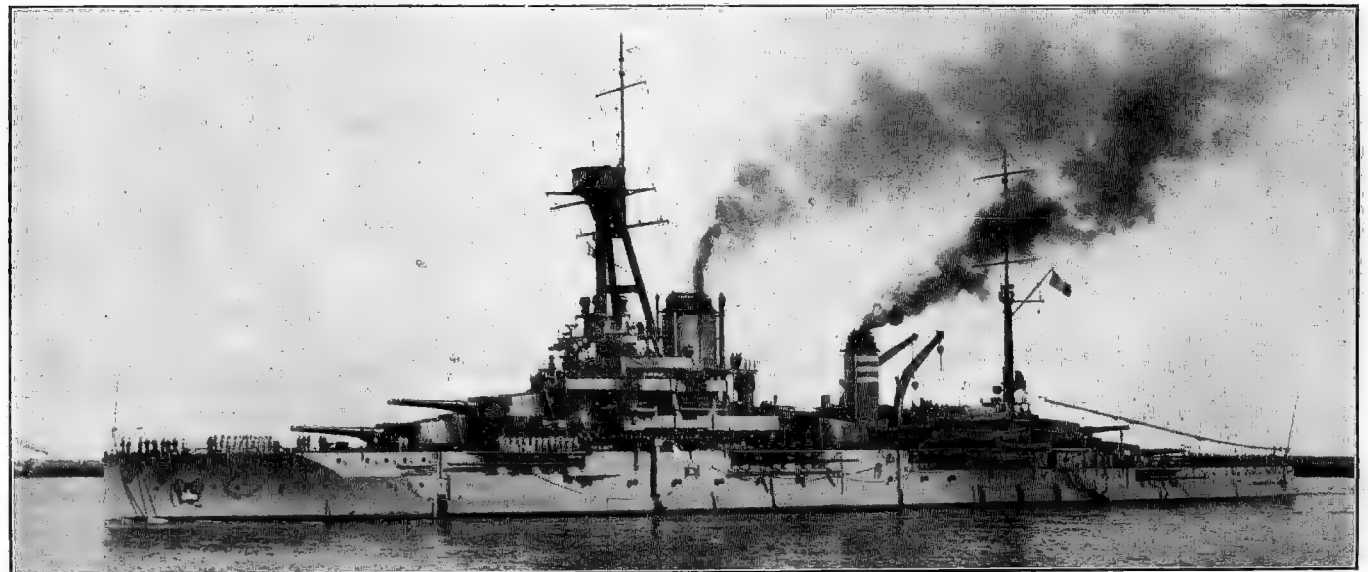


PARIS.

1929 Photo, M. Bar, Toulon.

Name	Builder	Machinery	Laid down	Completed	Trials Full power	Boilers	Best recent speed
J. Bart	Brest	F. & C. de la Méd	Nov., '10	June '13	= 22·04	Belleville	20
Courbet	Lorient	St. N'z're (Ch. de l'Atlantique)	Sept., '10	Sept. '13	= 20·81	Belleville & Du Temple	20
Paris	La Seyne	F. & C. de la Méd	Nov., '11	Aug. '14	35,610 = 21·6	Belleville	20·5

General Notes.—Designed by M. Lyasse. Construction very fine and highly finished in details. Average cost about £2,475,000. The heavy weight of deep 7" belt at ends made them pitch in a head sea, hence modification noted against plans above. On the other hand, J. Bart was twice torpedoed in the bows by an Austrian submarine and her heavy bow belt contributed largely to her survival. France, of this class, foundered in Quiberon Bay, Aug., 1922. All this class have been reconstructed, 1928-1929. Courbet has been completely reboilered.



JEAN BART. (Courbet similar, but derricks as Paris).

1926 Photo, Cassar, Malta.

OLD BATTLESHIPS (*Cuirassés de 2^e rang*).

Old Battleships—FRANCE

DANTON CLASS.—3 SHIPS.

DIDEROT (April, 1909), **CONDORCET** (April, 1909), and **VOLTAIRE** (Jan., 1909).

Normal displacement, 18,890 tons. Complement, 923.

Length (*w.l.*), 475½ feet. Beam, 84½ feet. Mean draught, 27 feet. Max. draught, 28½ feet.
Length (*over all*), 481 feet.

Guns :

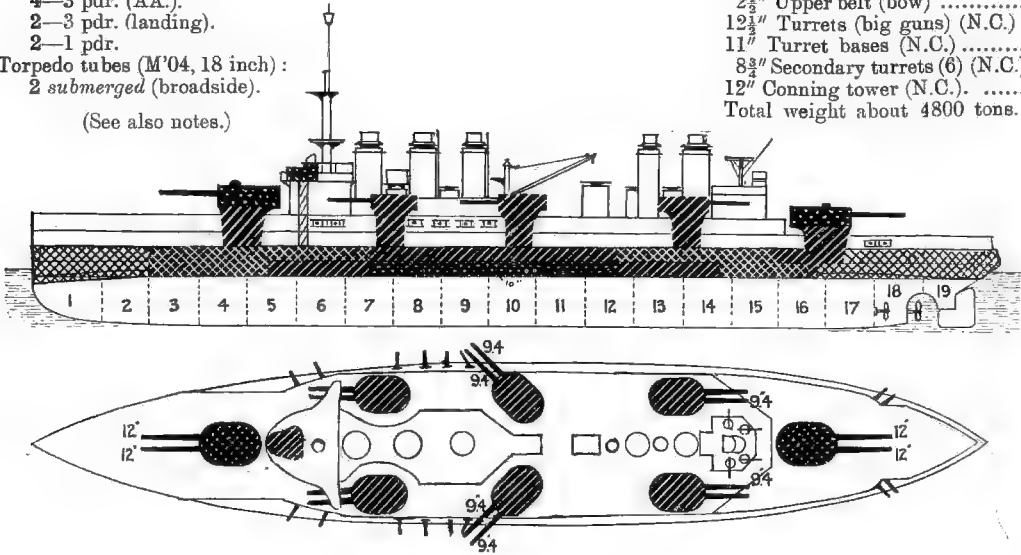
- 4—12 inch, 45 cal. (M '06).
- 12—9·4 inch, 49·5 cal. (M '02-'06).
- 12—3 in. A.A. (on 9·4 inch turrets).
- 2—3 pdr. (S.A.).
- 4—3 pdr. (A.A.).
- 2—3 pdr. (landing).
- 2—1 pdr.

Torpedo tubes (M'04, 18 inch) :
2 submerged (broadside).

(See also notes.)

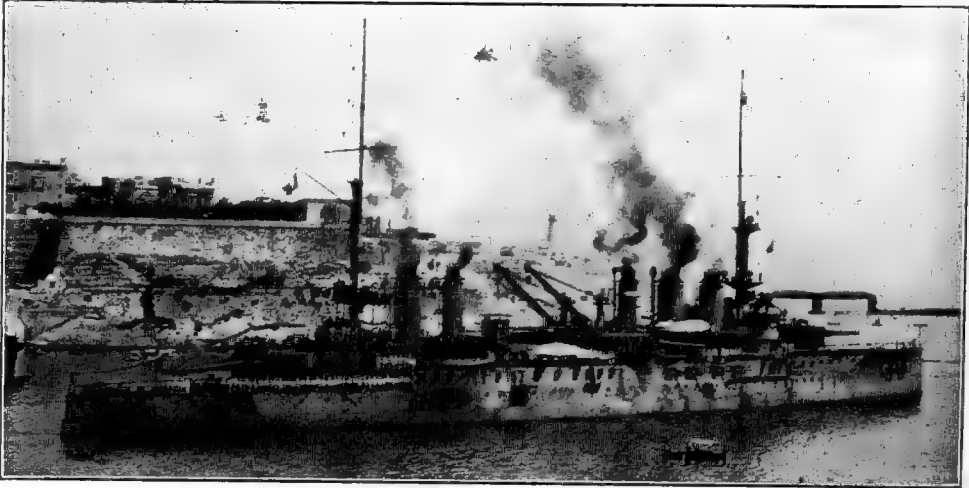
Armour :

- 10½" Belt (amidships)
- 6" Belt (ends)
- 3" Deck (flat on upper belt) ...
- 3" Deck (below belt)
- 9"·6" Lower deck side
- 2½" Upper belt (bow)
- 12½" Turrets (big guns) (N.C.)
- 11" Turret bases (N.C.)
- 8½" Secondary turrets (6) (N.C.)
- 12" Conning tower (N.C.)
- Total weight about 4800 tons.



VOLTAIRE. (*Condorcet* similar.)

1925 Photo, by courtesy of the Ministry of Marine.

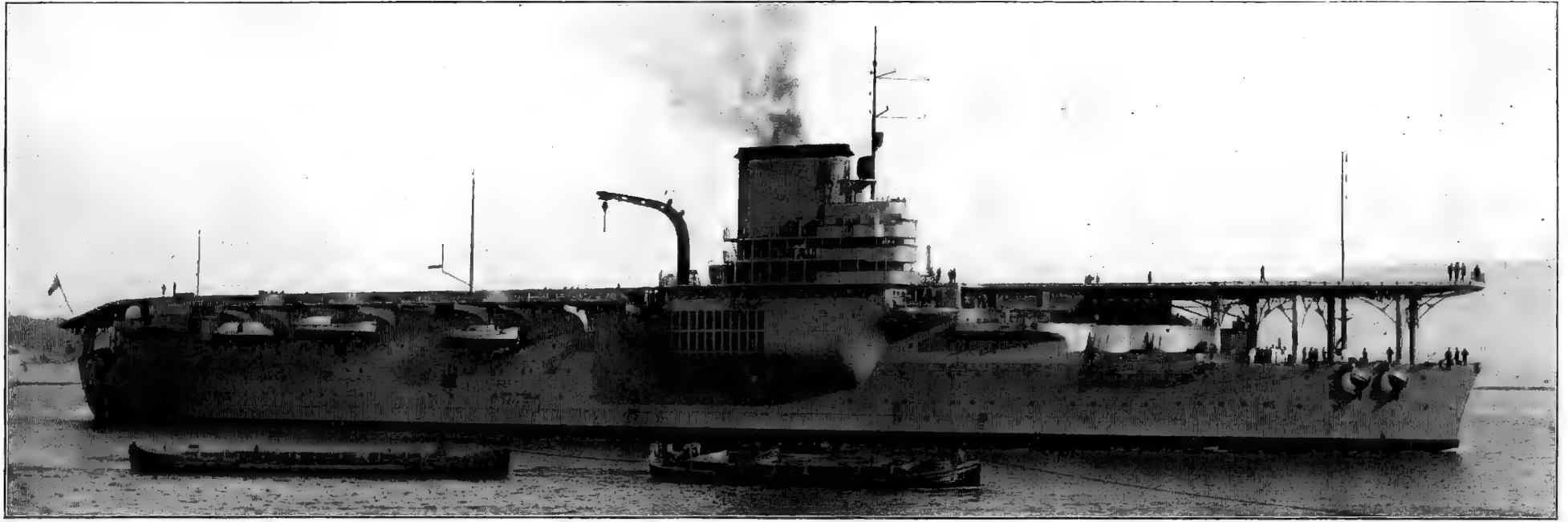


DIDEROT.

Machinery : Parsons turbine. 4 screws. Boilers : 26 Belleville or Niclausse (large tubes). Designed H.P. 22,500 = 19·25 kts. Coal : normal 965 tons : maximum 2100 tons. Endurance : nominally, 3750 miles at 10 kts., 2300 at 18½ kts. (See note below.)

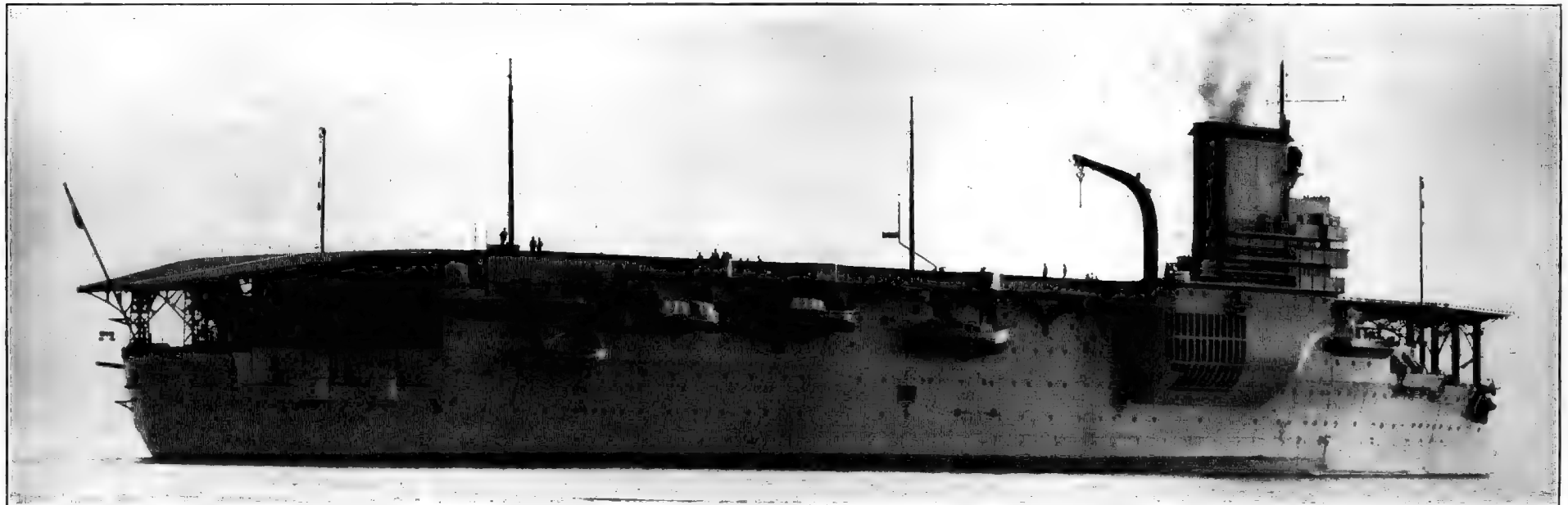
Name.	Builder.	Machinery.	Laid down	Completed.	24 hrs.	Trials. 10 hrs.	3 hrs.	Boilers	Best recent speed.
Diderot	St. Nazaire	St. Nazaire	Oct. '07	Sept. '11	= 18·4	= 19·48	= 19·9	Niclausse	14-16
Condorcet	St. Nazaire	St. Nazaire	Aug. '07	June '11	= 18·02	= 19·31	= 19·7	Niclausse	
Voltaire	La Seyne	F. & Ch., Médit.	July, '07	Aug. '11	= 18·60	= 19·78	= 20·66	Belleville	

General Notes.—Average cost, £2,190,000 each. They are not very successful ships, and consume large quantities of coal at cruising speed. Some have lateral anti-torpedo "caissons" along hull below waterline. *Danton* of this class lost during War. *Voltaire* twice torpedoed by U-boat during 1918 and repaired. Designed by M. Lhomme. *Vergniaud* condemned 1921, and expended as a target for aircraft bombs. *Condorcet* and *Voltaire* refitted, 1923-24. *Diderot* 1925, extra under-water protection being given at some sacrifice of speed. All three are now employed as sea-going training ships. *Condorcet*, being attached to Torpedo School, carries several extra deck torpedo tubes for practice purposes.



BÉARN.

1927 Photo, Marius Bar, Toulon.



BÉARN.

1927 Photo, Marius Bar, Toulon.

BÉARN (F. & Ch. de la Méditerranée, La Seyne).

Laid down January, 1914, as a battleship of the "*Normandie*" class. Launched April, 1920, construction having been suspended during the war; re-designed as a Fleet Carrier and conversion begun at La Seyne in August, 1923. Finally completed May, 1927.

Displacement: 21,800 tons *normal*, 25,000 tons *full load*.

Dimensions: 576 (*w.l.*), 560 (*p.p.*) feet × 89 feet × 26 feet. (Extreme beam is 102 feet).

Complement, 875.

Guns:

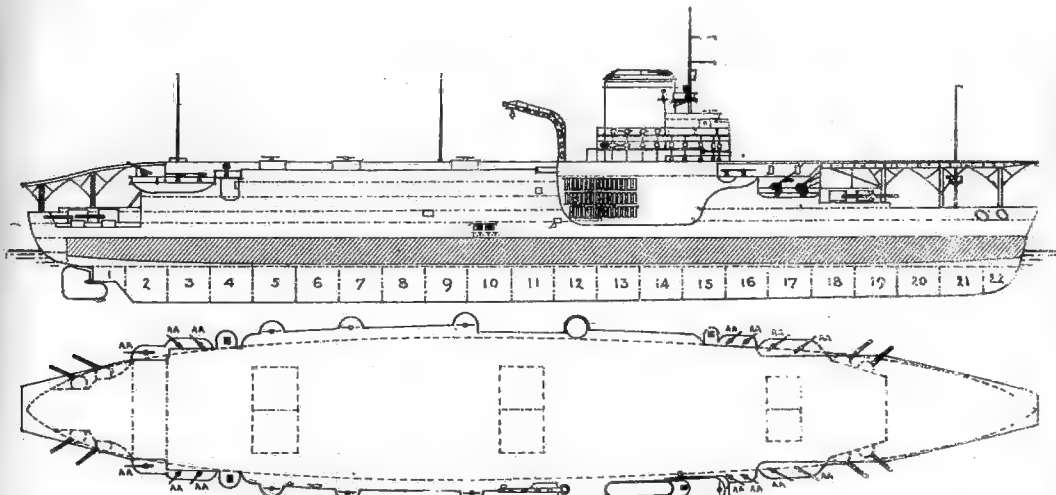
- 8—6.1 inch.
- 6—14 pdr AA.
- 8—3 pdr. AA.
- 12 M.G.

Tubes:

- 4—21.7 inch.

Armour:

- 1" Main deck
- 1—2½" Lower deck
- 1" Flight deck
- 3¼" Side armour to 6½ feet below w.l.



Total designed H.P. 39,000 = 21 kts. Fitted with 2 turbines on inner shafts (for main propulsion), = 24,000 S.H.P. and 2 sets reciprocating engines on outer shafts (for cruising and manoeuvring purposes only) = 15,000 I.H.P. This machinery was originally ordered for *Normandie*. 12 Du Temple-Normand small tube boilers. 4 screws. Oil fuel: 2,160 tons. Radius: 6,000 miles at 10 kts. Is capable of accommodating over 40 planes.

Notes.—It will be observed on comparison with previous issues of "Fighting Ships," that the original design of this aircraft-carrier has been modified considerably.

At a height of 51 feet from the waterline is the flight deck, 600 feet long. An external gangway at a level 3 ft. 9 in. lower allows personnel to move about clear of the flight deck. Underneath the flight deck is the central hangar, in which are housed 5 torpedo planes, 5 reconnaissance planes, and 7 fighter planes (part of the total of 40 carried). Under this hangar again, are workshops for assembling and repairs, and for accommodation of partially equipped planes. The hangar and workshops can be divided into two portions, by means of asbestos curtains.

Hangar and workshops are equipped with overhead transporter cranes for the rapid manipulation of heavy weights, and a special type of derrick (12 tons capacity, 33 feet radius) is fitted on the starboard side of ship, abaft funnel.

Planes are carried up to flight deck by means of three electric lifts, the smallest being 27 × 40 feet and the largest 50 × 50 feet. On a lift, forward, is a charthouse which by this means can be raised above or dropped below flight deck.

A catapult, of the compressed air type, about 65 feet in length, is mounted on a turntable; it can throw off a plane at a speed of about 47 m.p.h.

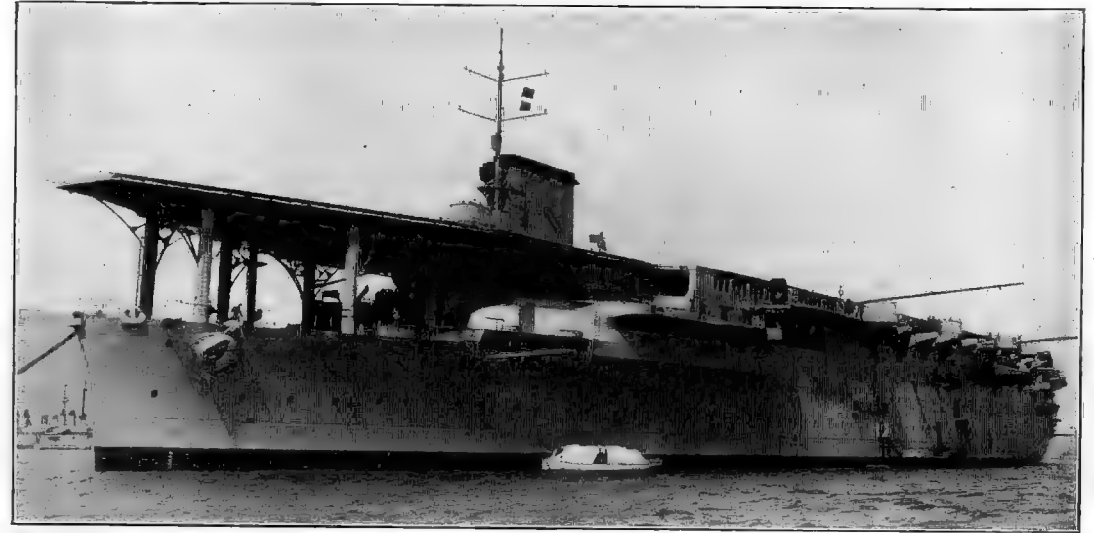
Smoke is diluted with cold air to avoid eddies in surrounding atmosphere.

Other items of equipment comprise a special hot water service for filling radiators of seaplanes, and a pneumatic distributing system for conveying their fuel.

Stores carried include 3530 cubic ft. of petrol, under inert gas, and 530 cubic feet of oil.

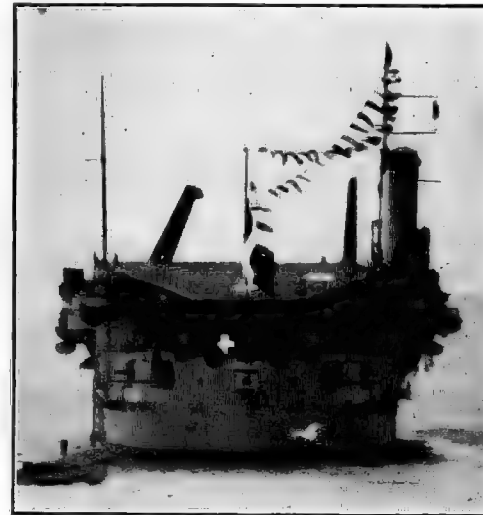
It has been stated that owing to lack of space on flight deck, only about one fourth of the total number of planes carried can be employed simultaneously.

Trials.—On trial a speed of 22 kts. was reached.



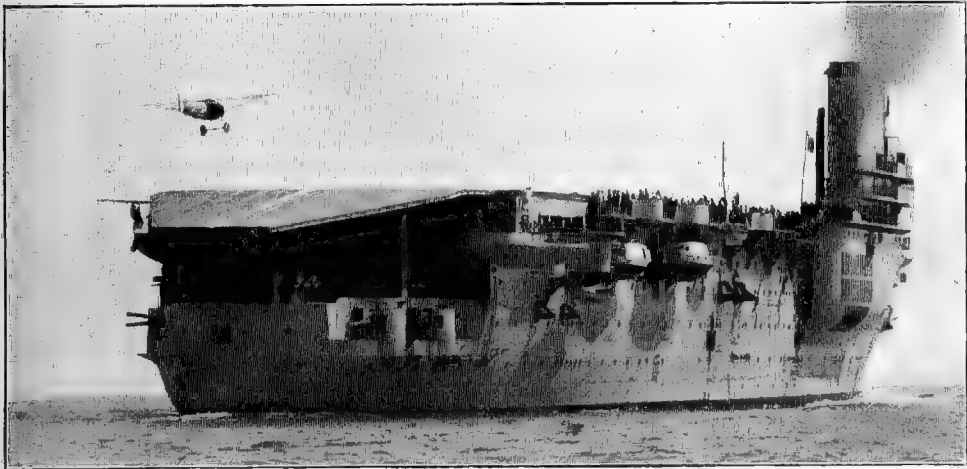
BÉARN.

1927 Photo, Marius Bar, Toulon.

BÉARN, showing lift opening up.
1928 Photo, W. A. Fuller, Esq.

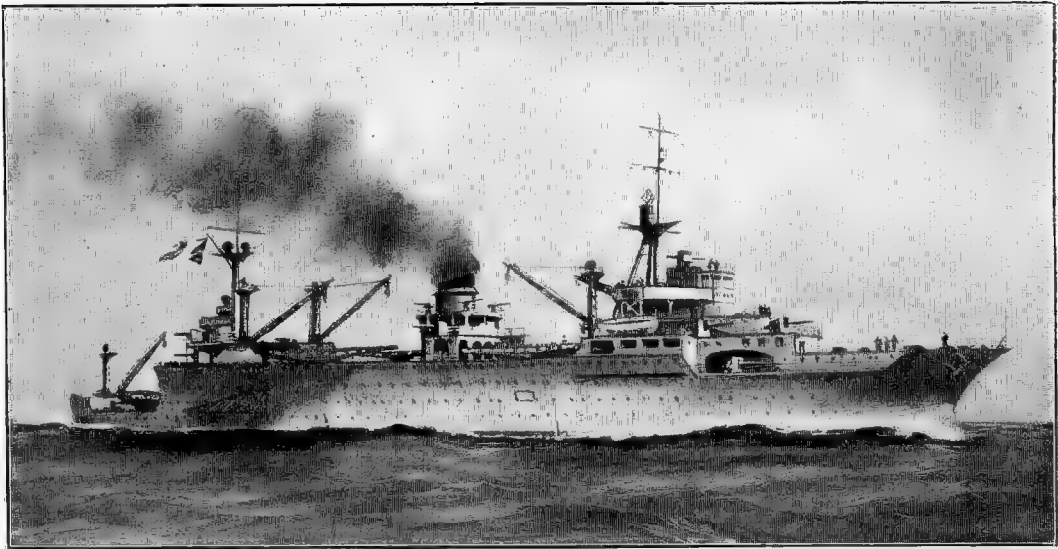
BÉARN, bow view.

1927 Photo, M. Bar.



BÉARN (showing armament).

1927 Photo, Marius Bar, Toulon.



COMMANDANT TESTE.

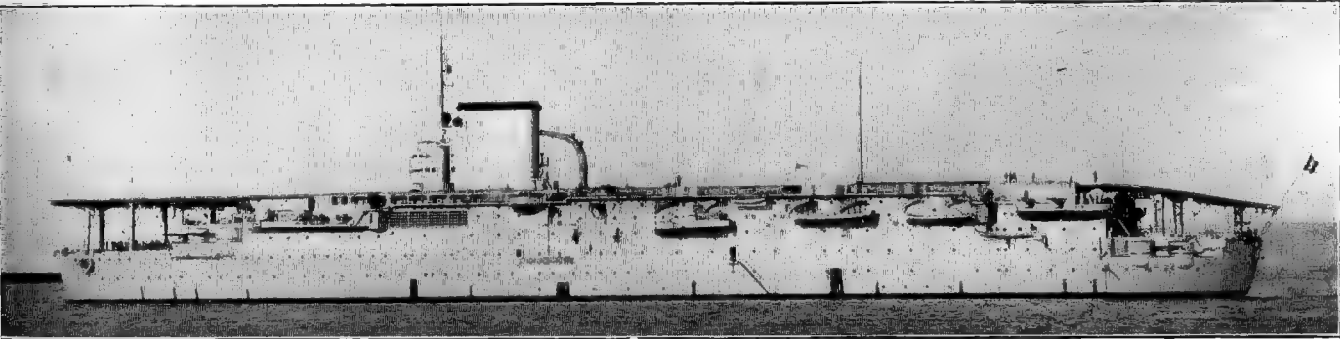
1929 Drawing, by Oscar Parkes

COMMANDANT TESTE. (April 12th, 1929.)

Displacement, 10,000 tons. Length, 512½ feet (*p.p.*), 558 feet (*o.a.*). Beam, 71½ feet (88½ feet, extreme). Draught, 23½ feet. Complement, 649.

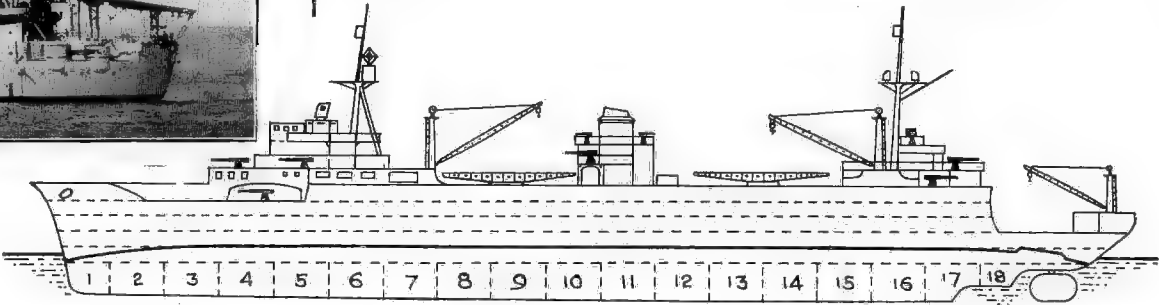
Guns :
12—3.9 inch AA.
8—3 pdr. AA.
12 M.G.

Armour :
2" (H.T.?) side at waterline and a
1½" protective deck over engine and boiler spaces.



BÉARN.

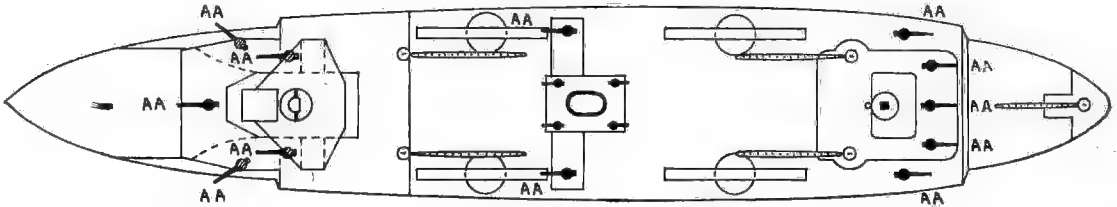
1928 Photo, R. Perkins, Esq.



Machinery : 2 Schneider-Zoelly geared turbines. 2 screws. 4 Small tube boilers (mixed firing).
S.H.P. 21,000 = 20 kts. Radius of action : 6000 miles at 10 kts.

Notes.—This vessel is intended to act as a tender to *Béarn*, and as a reserve from which aircraft supplies can be drawn by cruisers which carry planes. Authorised under 1926 Programme, she was ordered in May, 1927, from the Société d'Exploitation des Chantiers de la Gironde, Bordeaux (a subsidiary of the Schneider group). She will ultimately mount 4 catapults.

Special Note.—The small transports *Hamelin* and *A. de Coureux* (described elsewhere) are now fitted as Aircraft Tenders, their official rating being "Ravitailleurs d'Aviation."





E. QUINET.

1929 Official Photo.

(WALDECK-ROUSSEAU CLASS—2 SHIPS).

EDGAR QUINET (Sept., 1907), **WALDECK-ROUSSEAU** (March, 1908).

Normal displacement, 14,100 tons. Complement, 892.

Length (waterline), 515 feet. Beam, 70½ feet. Max. draught, 27½ feet. Length over all, 521½ feet.

Guns—(M '02):

14—7·6 inch, 50 cal.

(E. Quinet only 10.)

6—3 inch A.A.

10—9 pdr. (2 are A.A.)

2—3 pdr.

2—1 pdr. or M.G.

Torpedo tubes (18 inch):

2 submerged

(over Section 4).

Armour:

6½" Belt (amidship)

3" Belt (ends).....

6" Bulkhead (aft) ...

2½" Deck (slopes) ...

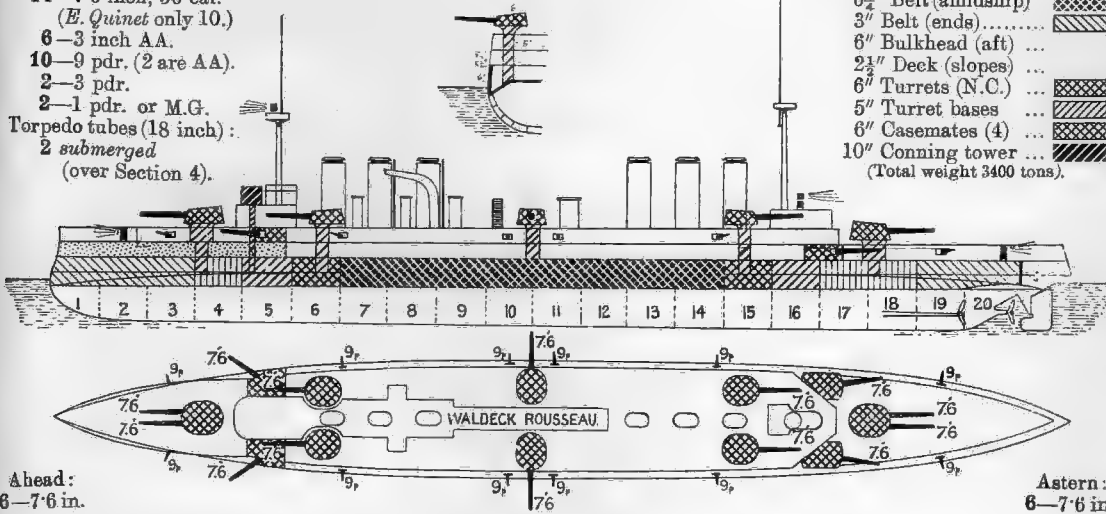
6" Turrets (N.C.) ...

5" Turret bases ...

6" Casemates (4) ...

10" Conning tower ...

(Total weight 3400 tons).



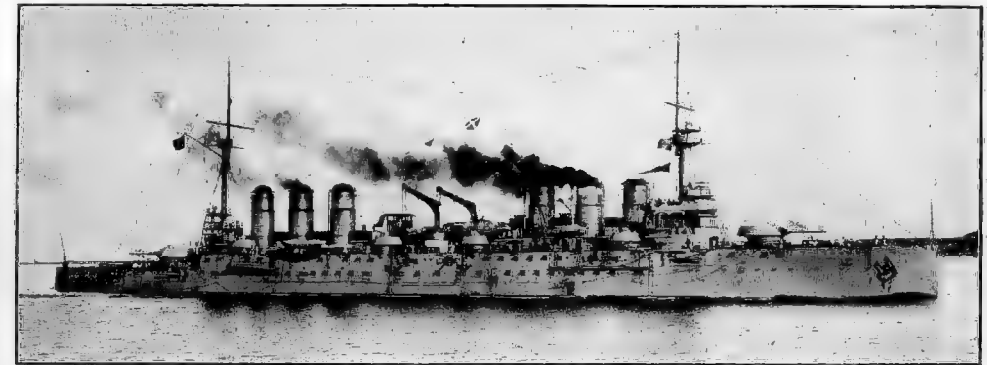
Ahead: 6—7·6 in.

Aft: 6—7·6 in.

Broadside: 9—7·6 in.

Machinery: 3 sets vertical triple expansion. 3 screws. Boilers (large tube): See Notes. Designed H.P. 36,000=23 kts. Coal: normal 1,242 tons; maximum 1,900 tons (E.Q., 2030 tons). Nominal endurance: 6560 miles at 10 kts. 2 seaplanes added to equipment, 1923. E. Quinet selected for service as Training Ship for Midshipmen in Oct., 1928, main deck guns and 1st and 6th funnels being removed.

Name	Builder	Machinery	Laid down	Completed	Trials:		Boilers	Best recent speed
					30 boilers 10 hours	Full power 3 hours		
E. Quinet	Brest Yard		Nov., '05	1911	36,328=23·8	40,294=23·9	40 Belleville	20
W. Rousseau	Lorient Yard		June, '06	1911		35,286=23·1	42 Niclausse	



E. RENAN.

Photo added 1925, by courtesy of the Ministry of Marine.

ERNEST RENAN (March, 1906).

Normal displacement, 13,720 tons. Complement, 824.

Length (waterline), 515 feet (o.a. 521½ feet). Beam, 70 feet. Max. draught, 27½ feet.

Guns:

4—7·6 inch, 50 cal.

(M '02)

12—6·5 inch, 45 cal.

('93-'96 M)

6—3 inch A.A.

12—9 pdr. (4 are A.A.)

Torpedo tubes (18 inch):

2 submerged

(over Section 4).

(1904 Model torpedoes).

Armour:

6½" Belt (amidships)

3½" Belt (ends).....

6" Bulkhead (aft) ...

2½" Deck (slopes) ...

6" Main turrets (N.C.)

4"—5" Turret bases {

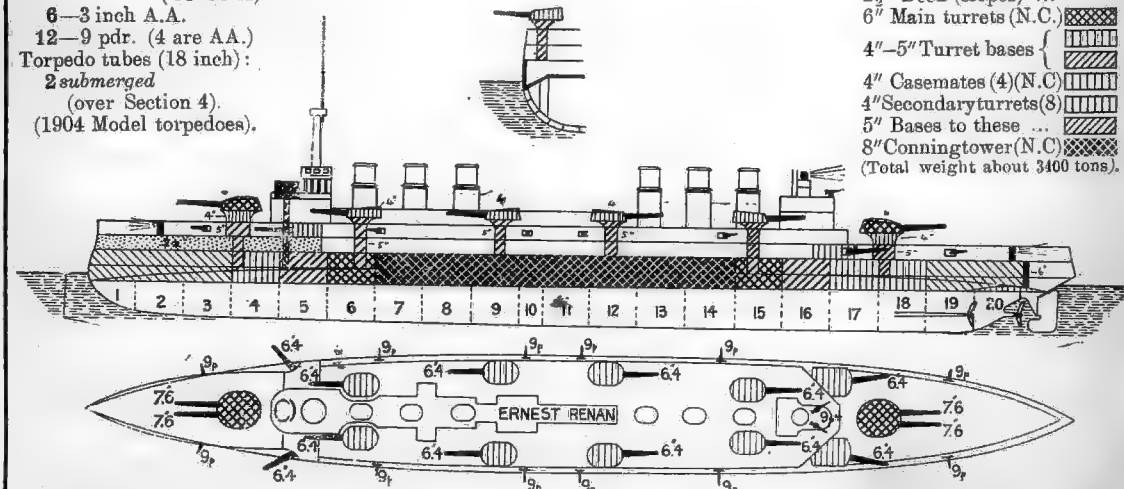
4" Casemates (4)(N.C.)

4" Secondary turrets (8)

5" Bases to these ...

8" Conning tower (N.C.)

(Total weight about 3400 tons).



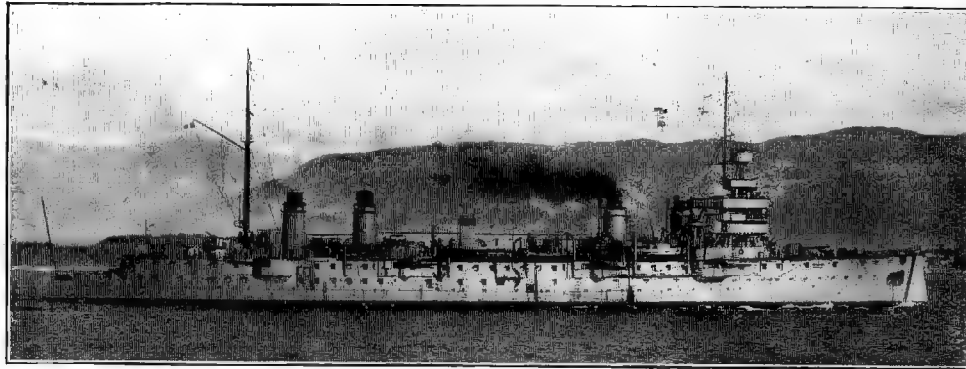
Machinery: 3 sets vertical triple expansion. 3 screws. Boilers: 42 Niclausse (large tube). Designed H.P. 36,000=23 kts. Coal: normal 1354 tons; maximum 2300 tons. Nominal endurance: 6700 miles at 10 kts.

Armour Notes.—Belt is 12½ feet wide, 4½ feet of it below waterline. Upper edge 5" thick; bottom 3½".

Gunnery Notes.—Loading positions, big guns: all round. Hoists: electric to all guns. All guns manoeuvred electrically and hand. Arcs of fire: Big turrets, 240°; secondary turrets, 150°; casemates, 110°. Height of guns above water: Bow and secondary turrets, 29½ feet; after turret, 22 feet. Forward casemates, 20 feet; after casemates, 12 feet.

General Notes.—Laid down at St. Nazaire, Aug., 1904; completed, 1909. Made 24·24 kts. on first trials with 37,685 H.P. Best speed now 21 kts. Mainmast removed 1918, but replaced 1922. 2 seaplanes added to equipment, 1923. Replaced Marseillaise as Gunnery Training Ship in 1928, latter vessel being condemned.

* Gunnery Notes unofficial.



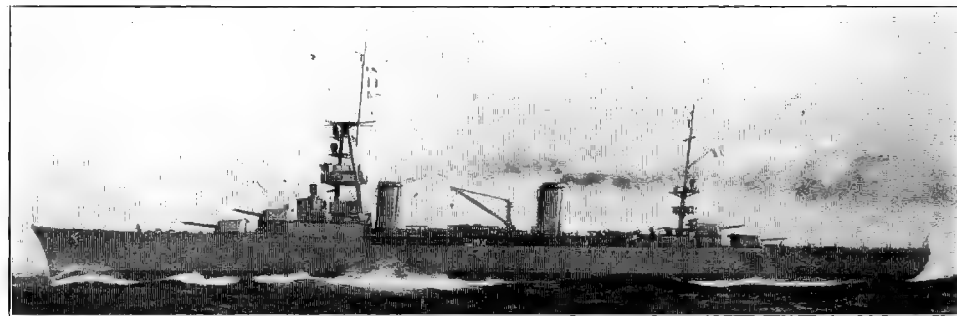
GUEYDON. (Note alterations to mast and bridgework.)

1927 Photo, M. Bar, Toulon.

(Sea-going Gunnery Training Ship.)

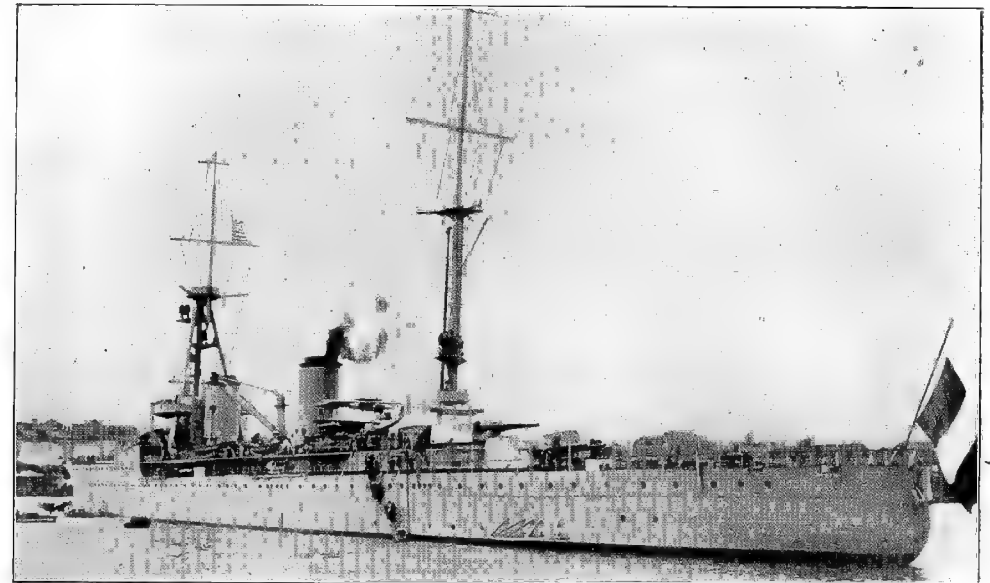
GUEYDON (September, 1899). Displacement: 9702 tons. Length (*waterline*), 452½ feet. Beam, 63½ feet. *Max.* draught, 25 feet. Length (*over all*), 459 feet. Guns: 8—5.5 inch. 4—3 inch AA., 12—40 m/m., 4—37 m/m. Armour (Harvey Nickel): 6" Belt (ends), 3" Forecastle, 2"—1", ¾" Decks, 3"—2½" Lower deck side, 7½" Casemates (8), 6½" Conning tower. Machinery: 2 sets vertical triple expansion. 3 screws. Boilers: 20 Niclausse. Designed H.P. 19,600=21 kts. Coal: *normal* 1030 tons, *maximum* 1650 tons. Begun at Lorient, 1898; completed, 1902. Complement, 487. Reconstructed, with tripod mast and other modifications, 1926.

Note.—*Dupetit-Thouars* of this class lost during War; *Montcalm* removed from List, 1925; *Gueydon* replaced older Cruiser *Pothuau* (scrapped) as Gunnery Training Ship, April, 1926.



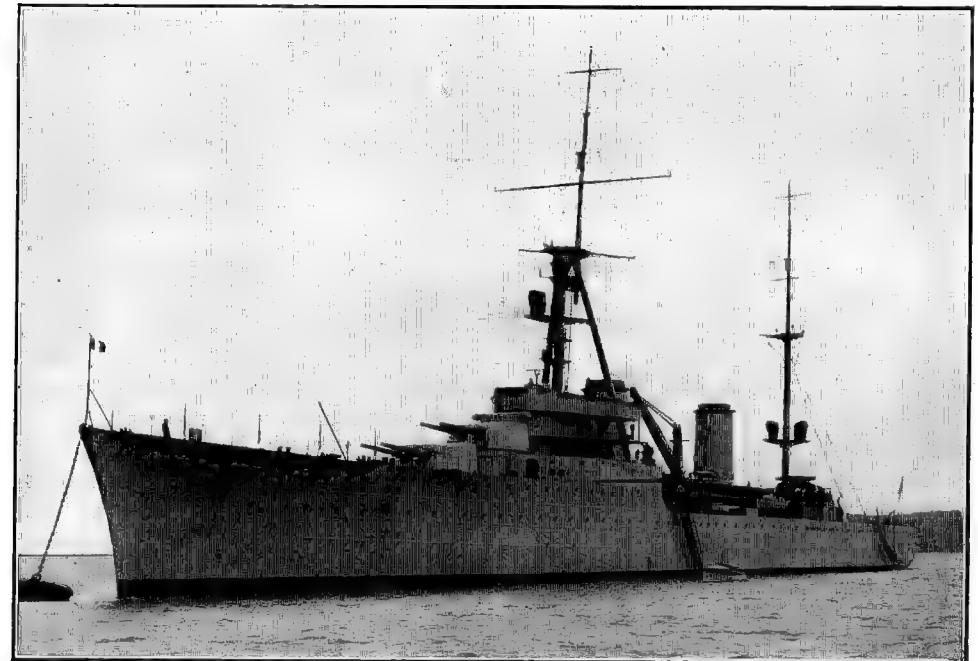
SUFFREN.

1929 Photo, M. Bar, Toulon.



TOURVILLE.

1929 Official Photo.



TOURVILLE.

1928 Photo, by courtesy of the Ministry of Marine.

1924 CRUISERS.

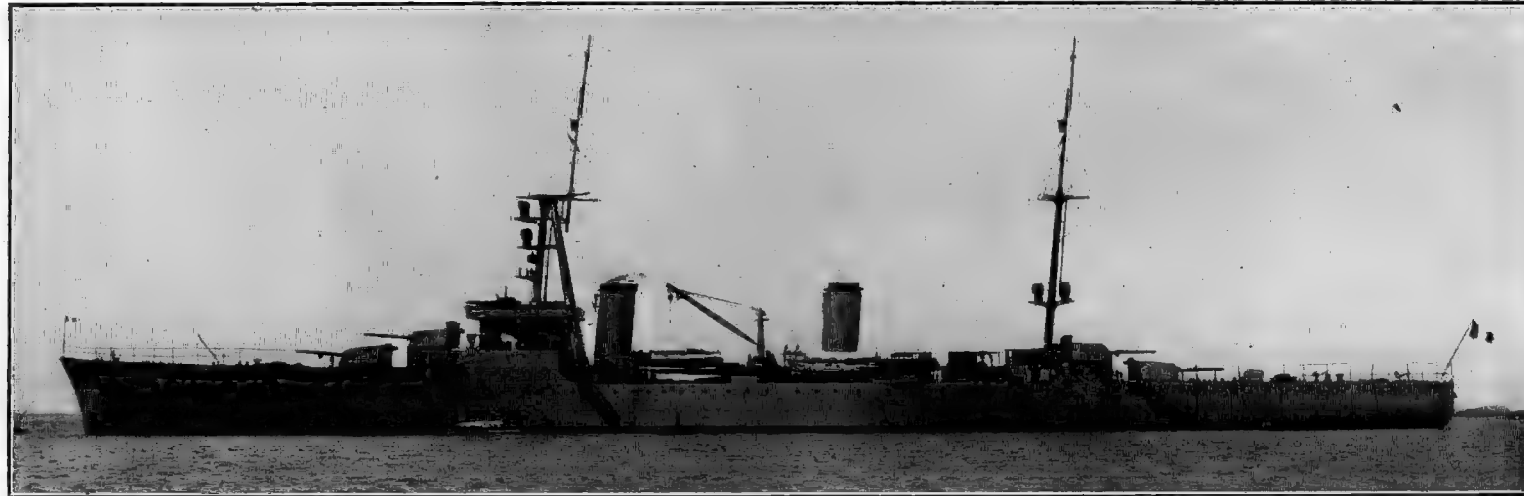
Cruisers—FRANCE

(TOURVILLE AND SUFFREN CLASSES—6 SHIPS).

DUQUESNE (Dec 17th, 1925), **TOURVILLE** (Aug. 24th, 1926), **SUFFREN** (May 3rd, 1927), **COLBERT** (April 20th, 1928), **FOCH** (April 24, 1929), and **DUPLEIX** (building).

Standard displacement, 10,000 tons (11,900 tons deep load). Complement, 605. Length (p.p.), 607 feet in all; (o.a.), first two, 626½; other four, about 617 feet.

Beam, 63 feet. Draught, 20½ feet.



TOURVILLE.

1928 Photo, by courtesy of Ministry of Marine.

Guns:

8—8 inch (new model) (Dir. Con.)

8—3 inch AA.

(Colbert & Foch, 8—3.5 inch).

8—37 m/m AA.

(Suffren, Colbert & Foch, 7—2 pdr.)

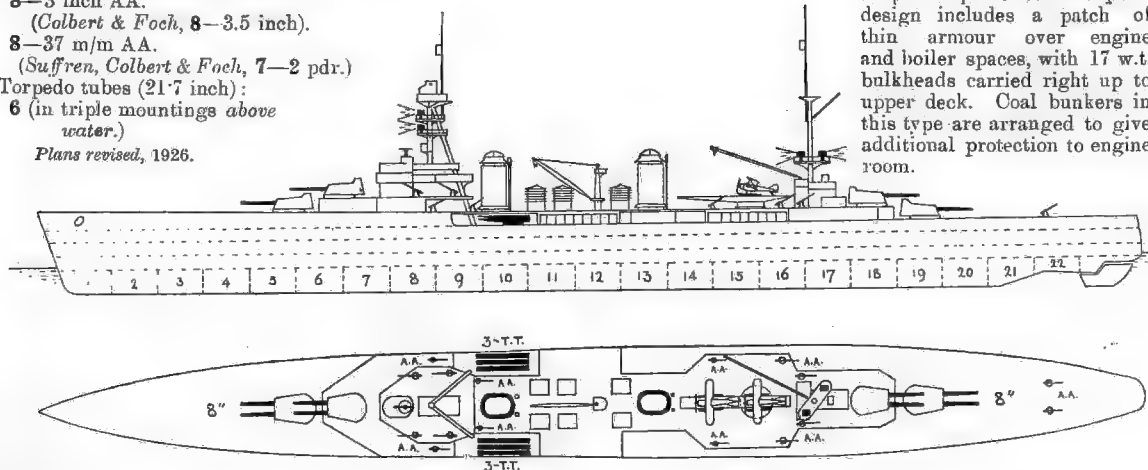
Torpedo tubes (21.7 inch):

6 (in triple mountings above water.)

Plans revised, 1926.

Armour:

Practically nil in first pair, except for thin gun-shields and a splinter-proof C.T. Suffren design includes a patch of thin armour over engine and boiler spaces, with 17 w.t. bulkheads carried right up to upper deck. Coal bunkers in this type are arranged to give additional protection to engine room.



Machinery: 4 Rateau geared turbines. Boilers: 9 Guyot (8 main and 1 auxiliary). Designed S.H.P., 120,000 = 34.5 kts. (Duquesne and Tourville); 90,000 = 33 kts. (other four). 4 screws in first two, 3 in others. Oil: 1800 tons. (Suffren, Foch, Colbert, to have mixed firing.) Radius: 5,000 miles at 15 kts., 700 at full speed.

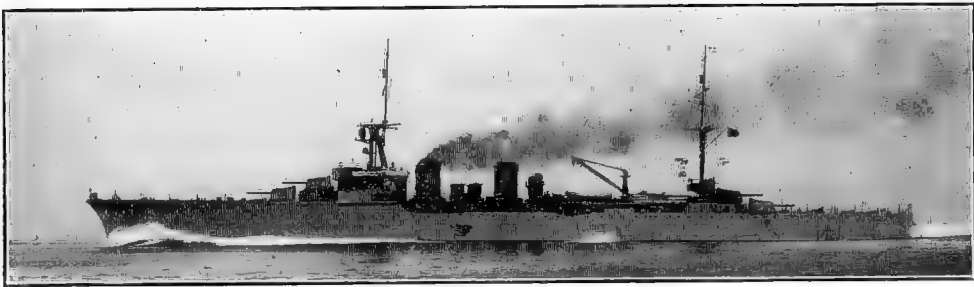
Duquesne and Tourville equipped with 2 scouting seaplanes and a launching catapult. Others have 2 catapults and 3 seaplanes.

Name	Builder	Machinery	Laid down	Completed	Trials:
Tourville	Lorient	A. & C. de Bretagne	14 April, 1925	1928	130,000 = 36.15
Duquesne	Brest		30 Oct., 1924	1928	135,000 = 35.3
Suffren	Brest		3 May, 1926	Dec., 1928	90,000 = 34
Colbert	Brest		12 June, 1927	Sept., 1929	
Foch	Brest		21 June, 1928	To be 1930	
Dupleix			1929	" 1931	

General Note.—Above ships are practically enlarged copies of Duquesne-Tourville design, with an improved form of hull and heavier armament.

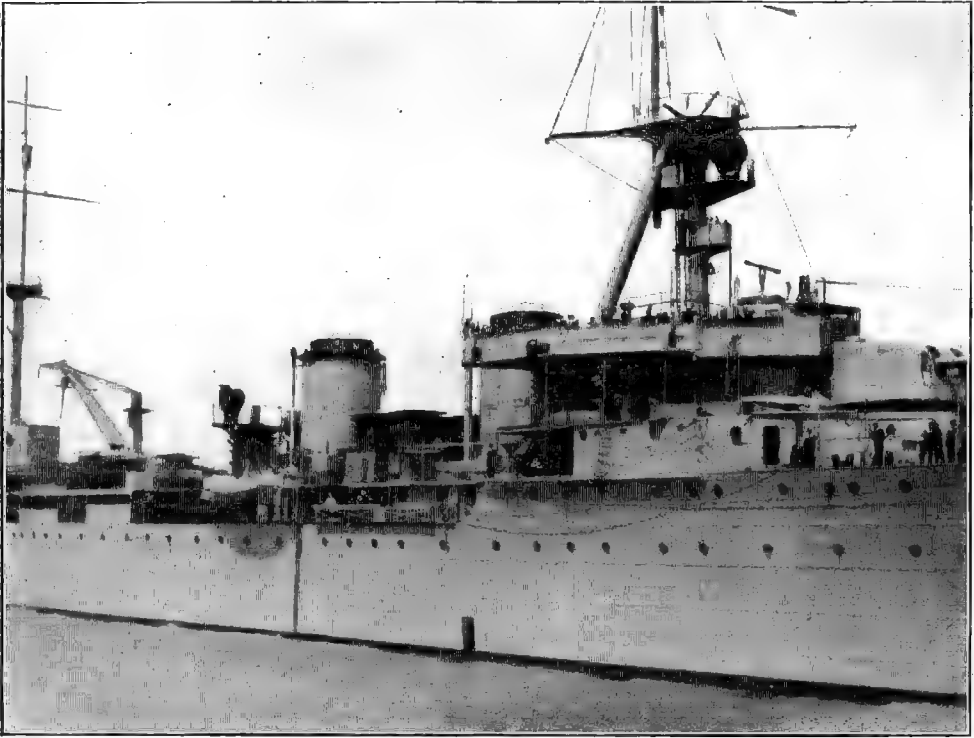
Engineering Notes.—Boiler and engine rooms are arranged alternately, and not in two separate groups, as suggested in plans appearing elsewhere. Tourville's trial speed of over 36 kts. was obtained while running in light condition.

Additional Views.



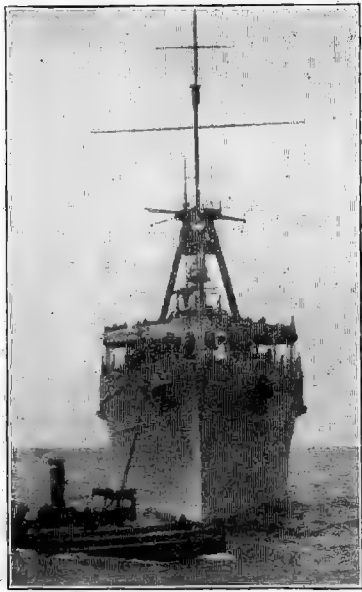
DUGUAY-TROUIN.

1927 Official Photo.

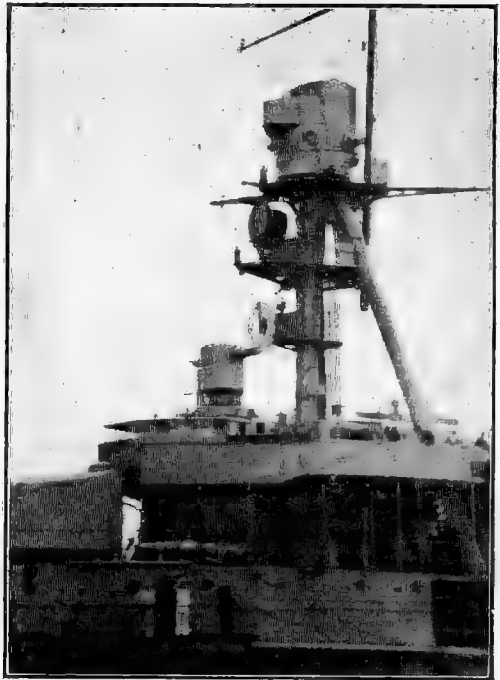


DUGUAY-TROUIN;

1927 Photo, "Fighting Ships."



DUGUAY-TROUIN. 1927 Photo, "Fighting Ships."
(bow view).



New Director top. 1928 Photo, W. A. Fuller, Esq.



DUGUAY-TROUIN.

1928 Photo, W. A. Fuller, Esq.

1922 CRUISERS.

Cruisers—FRANCE

(DUGUAY-TROUIN CLASS—3 SHIPS.)

DUGUAY-TROUIN (14th Aug., 1923), **LAMOTTE-PICQUET** (21st March, 1924),
PRIMAUGUET (21st May, 1924.)

Standard displacement, 7360 tons. Normal displacement, 7,880 tons. (Full load, 9,350.) Complement, 577.
Length (p.p.) 575 feet, (o.a.) 604 feet. Beam, 56½ feet. Draught, 17¼ feet *mean*; 20 feet *maximum* at full load.



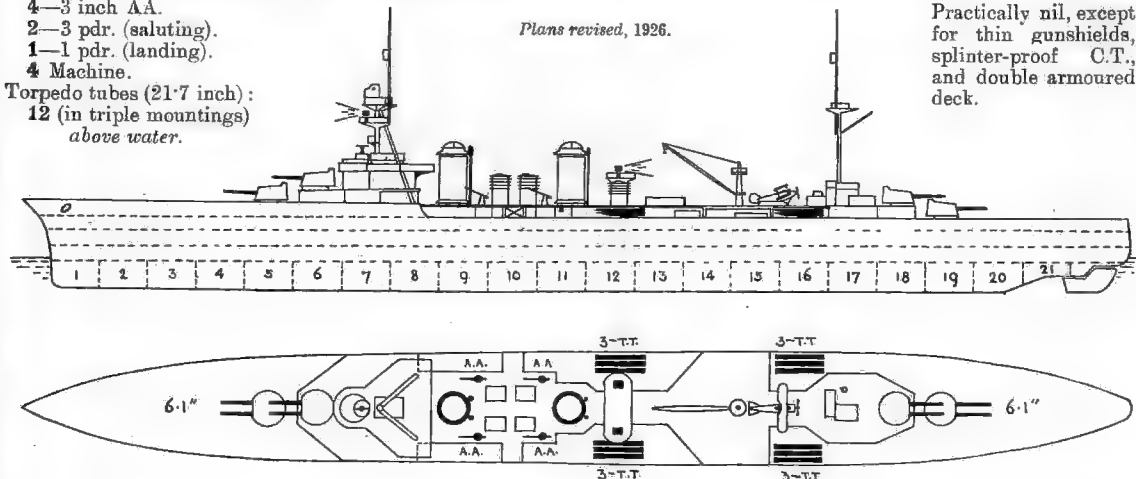
Guns:—
8—6.1 inch, 55 cal. (Dir. Con.)
4—3 inch A.A.

DUGUAY-TROUIN. (Masts and funnels have very slight rake.)

Plans revised, 1926.

Armour:
Practically nil, except
for thin gunshields,
splinter-proof C.T.,
and double armoured
deck.

Torpedo tubes (21.7 inch):
12 (in triple mountings)
above water.



1926 Official Photo, by courtesy of Ministry of Marine.

Machinery: 4 Parsons geared turbines. Boilers: 8 Guyot. Designed S.H.P. 100,000 = 34 kts. 4 screws. Oil: 500 tons *normal*, 1500 tons *maximum*. Radius: 880 miles at 34 kts.; 1290 at 30; 3000 at 20; 4500 at 15. Each vessel will eventually carry 2 scouting type seaplanes, and a launching catapult (abaft after turret). Depth charges carried.

Gunnery Notes.—6.1 inch guns are a new model with ballistic powers superior to old marks of 7.6 inch. Range reported to be 23,000 metres, elevation 35°. Reason for adoption of this calibre is said to have been its uniformity with Army type 6.1 inch, simplifying munition supply, more particularly of gas and incendiary shells. Gunhouses are reported to be gas-tight, and to have a special method of ventilation by forced draught.

Engineering Notes.—Trial results tabulated are averages of 6 hours with full complement of fuel and stores. *Maximum* speed for 1 hour, 34.5 kts. All three ships maintained 30 kts. for 24 hours' continuous steaming at half power with full load, and have proved very economical. Heating surface, 13,209 sq. feet.

Torpedo Notes.—24 torpedoes carried (12 in tubes, 12 in magazine). In addition, 4—17.7 inch torpedoes are carried for picket boats.

Name.	Builder.	Machinery.	Laid down.	Completed.	Trials. (6 hours)
Duguay-Trouin	Brest	F. & C. de la Méd.	4 Aug., '22	Aug., 1925	116,235 = 33.6
Primauguet	Brest	A. & C. de la Loire	10 Aug., '23	Nov., 1925	116,849 = 33.06
Lamotte-Picquet	Lorient	C. & A. de St. Nazaire (Penhoët).	17 Jan., '23	Dec., 1925	115,100 = 33.04

General Notes.—Completion dates given above do not represent actual passing into service, but merely dates of beginning trials.



THIONVILLE.

1924 Photo, M. Bar, Toulon.

THIONVILLE (ex-Austrian *Novara*, Feb., 1913).
(Classed as *Contre-Torpilleur*.)

Normal displacement, 3500 metric tons. Complement, 318, as Torpedo Training Ship, 425.

Length (*w.l.*), 410 $\frac{3}{4}$ feet. Beam, 42 feet. Mean draught, 15 feet. Length over all, 428 $\frac{1}{2}$ feet.

Guns (French):

*8—3.9 inch (M. 1917)

2—3 inch A.A.

Torpedo tubes (French 18 inch).

4 above water.

(As Torpedo School.)

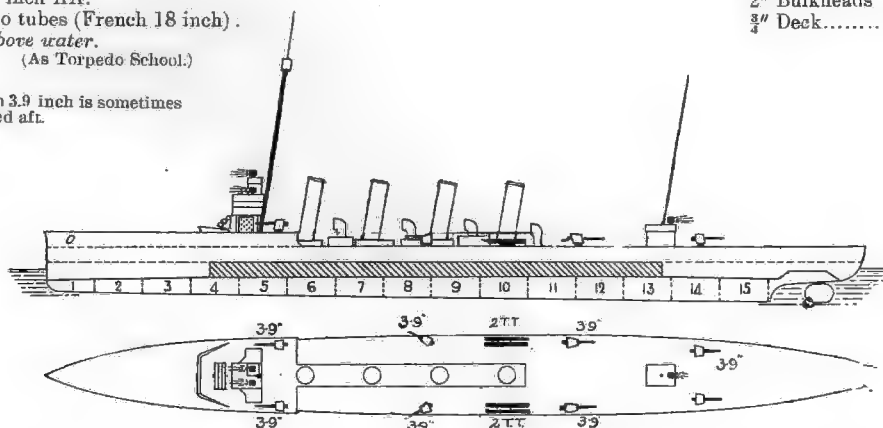
*A ninth 3.9 inch is sometimes carried aft.

Armour (steel):

2 $\frac{1}{2}$ " Belt (amidships)

2" Bulkheads

3" Deck.....



Ahead:

2—3.9 inch.

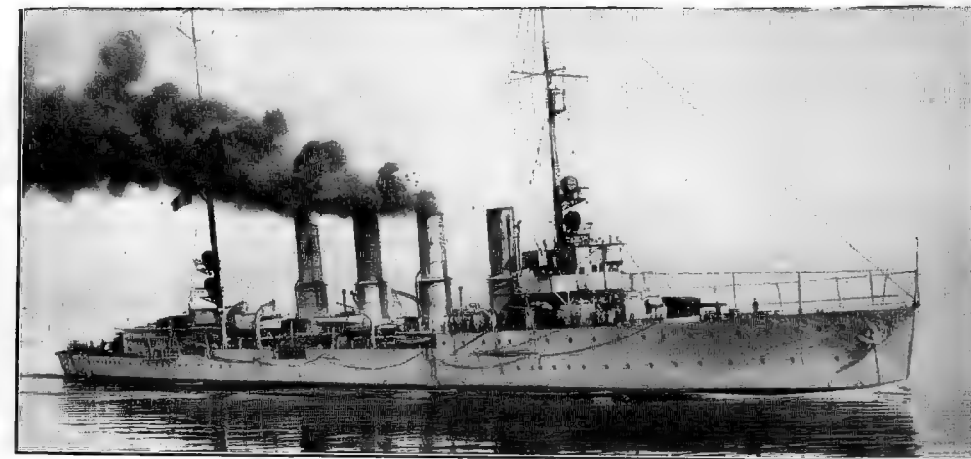
Broadside:—4—3.9 inch, 5—18 inch torpedo tubes.

Astern: 2—3.9 inch.

3—18 inch T.T.

Machinery: A.E.G. (Curtis) turbine (*see Notes*). 4 screws. Boilers: 16 Yarrow, modified by Indret. Designed H.P. 25,000=27 kts. Coal: *normal*, 450 tons; *maximum*, 650 tons. Nominal radius of action: 860 miles at 27 kts., 1600 miles at 24 kts. (actually less).

Notes.—Built for Austro-Hungarian Navy at Piume; engined by Ganz-Danubius Co. Begun February, 1912, completed October, 1914. Interned at Cattaro, Nov., 1918. Towed to Bizerta, 1920, *Thionville* foundered near Brindisi while on passage, but she was refloated. Refitted at Cherbourg D.Y., 1921. *Venezia* (ex-*Saida*) and *Brindisi* (ex-*Helgoland*) of this class added to Italian Navy. Attached to Torpedo School, Toulon, for long distance running, and officially rated as *Contre-Torpilleur*. Best recent speed, 26 kts.



MULHOUSE.

1925 Photo, by courtesy of the Ministry of Marine.

MULHOUSE (ex-German *Stralsund*) (Nov., 1911).

Normal displacement, 4550 tons; 5100 tons, full load. Complement, 453.

Length (*w.l.*), 446 $\frac{1}{2}$ feet. Beam, 43.6 feet. Mean draught, 16 $\frac{3}{4}$ feet.

Guns (German):

7—5.9 inch, 45 cal.

2—3 inch A.A.

4—3 pdr.

2 machine.

Torpedo tubes

(19.7 in. German):

2 above water.

Carries 120 mines.

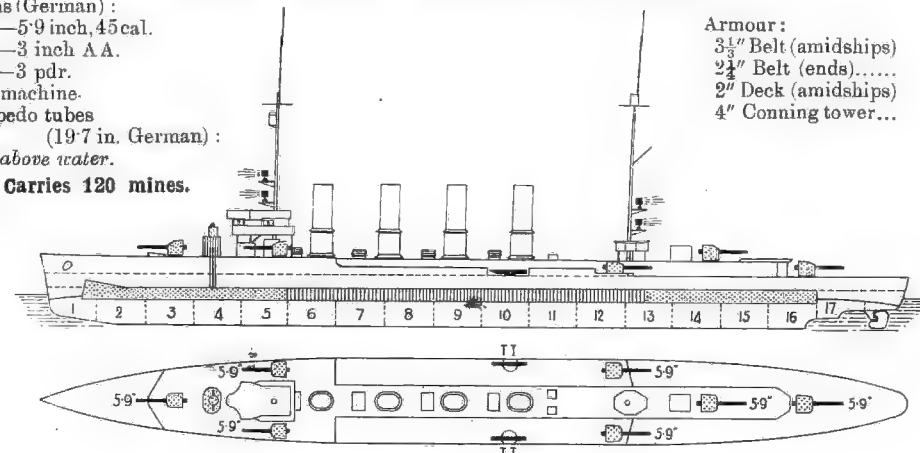
Armour:

3 $\frac{1}{2}$ " Belt (amidships)

2 $\frac{1}{2}$ " Belt (ends).....

2" Deck (amidships)

4" Conning tower...



Machinery: Turbine. 4 screws. Boilers: 16 Schulz-Thornycroft (re-tubed 1925). Designed H.P.: 24,200=26.75 kts. Coal: *normal* 750 tons; *max.* 1100 tons. Radius: 5850 miles at 12 kts. Oil: 140 tons. *Armour Notes*.—Belt is very narrow, and at full load practically submerged. *Engineering Notes*—4 boilers are oil burning.

Name	Builder	Machinery	Laid down	Completed	Trials (mean)		Turbines	Best speed
					6 hours	Best hour		
<i>Mulhouse</i>	Weser, Bremen	Weser	Ap. '10	June '12	27,032=26.9	35,515=28.27	Bergmann	22

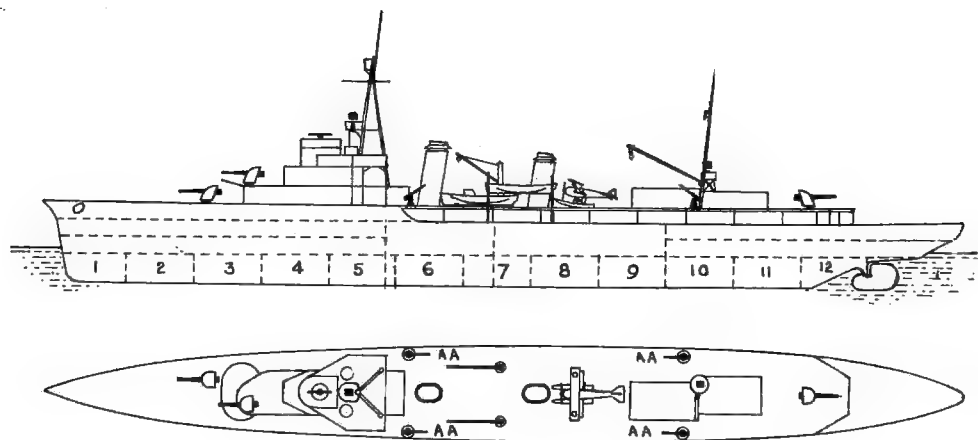
Begun under German 1910 Programme. *Magdeburg* of this class sunk 1914 in the Baltic. *Brestau* mined and sunk off Imbros, 1918. Sister ship *Taranto* added to Italian Navy, 1920. They were very fast ships, but vibrated greatly over 22 kts. Proved bad sea boats on first trials, and large bilge-keels were fitted to lessen rolling. All were heavily forced on trials. Very lightly built, extensive use being made of steel castings and aluminium. Engine-rooms very cramped. Double-bottom shallow, and only carried up amidships to under side of protective deck. Above protective deck are coal-bunkers, about 12 feet wide. *Mulhouse* surrendered at Cherbourg and added to French Navy, Sept., 1920. Refitted at Brest, 1925, but is not considered good for much more service.

FRANCE—Despatch Vessels.

1927 "AVISOS"—SLOOPS OR DESPATCH VESSELS.

(4 COLONIAL TYPE.)

BOUGAINVILLE, DUMONT D'URVILLE, A3, A4.

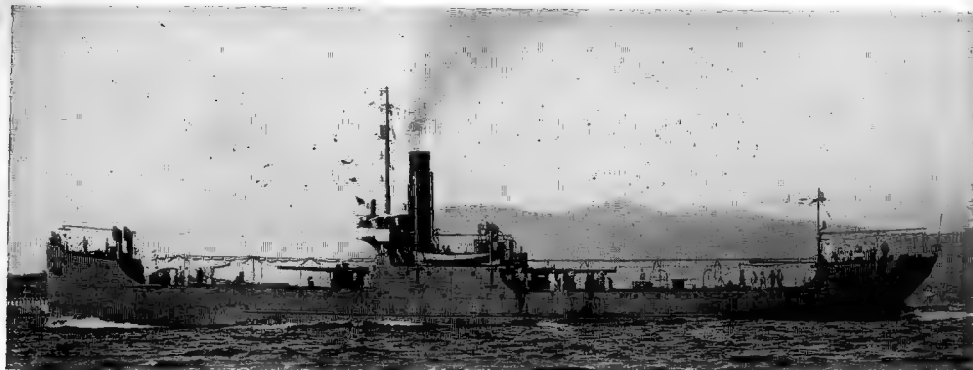


Displacement, 2030 tons *standard*; 2140 tons *normal*. Complement, 135. Dimensions: $334\frac{1}{2} \times 44\frac{1}{2} \times 12\frac{1}{2}$ feet. Guns: 3—5.5 inch, 4—37 m/m. AA., 6 M.G. Machinery: 2 sets Diesel engines (see *Notes*). Designed S.H.P. 3200 = 15.5 kts. Radius: 9000 miles at 10 kts. Provision to be made for carrying a seaplane.

Notes.—Two of these vessels were authorised under 1927 Programme and two under 1928. Builders of two are At. & Ch. du Sud-Ouest, Bordeaux. These two will have Sulzer Diesels, made by the At. & Ch. de la Loire and F. & Ch. de la Méditerranée, respectively. La Société d'Exploitation des Chantiers de la Gironde, Bordeaux, and Ch. & At. Provence, Port Bouc, are building one sloop each. Both will be engined with Burmeister & Wain Diesels manufactured by Schneider.

These vessels are designed for tropical service, with a special arrangement for circulation of cool air, and auxiliary plant is mostly electrically driven. All will be fitted as flagships.

Presumably the old aviso *Dumont D'Urville*, of *Dubourdieu* class, will be renamed or discarded on completion of her successor of same name.



CALAIS (mast before funnel).

Photographed 1920 for Builders by M. Bar, Toulon.

Appearance Note.—Mast may be either before or abaft funnel (stepped to starboard of centre line), as above views of *Calais* and *Dunkerque*. All ships by one yard have same appearance, e.g., all La Seyne boats as *Calais*; all Brest D.Y. boats as *Dunkerque*. None of these vessels would be likely to deceive an experienced observer by her resemblance to a merchant ship, in spite of having been designed with that end in view.



COUCY.

1920 Photo, H. Freund, Brest.



DUNKERQUE (mast abaft funnel).

1930 Photo, by courtesy of "Le Yacht."

("ARRAS" CLASS.—29 SHIPS.)

7 built at Navy Yards :—

ARRAS (July, 1918), **DUNKERQUE** (July, 1918), **REIMS** (Nov., 1918), **LAFFAUX** (ex-Verdun) (Nov., 1918), all four built by Brest D.Y. **NANCY** (Cherbourg D.Y., March, 1919). **BELFORT** (March, 1919), **BAPAUME** (Aug. 1918), both by Lorient D.Y.

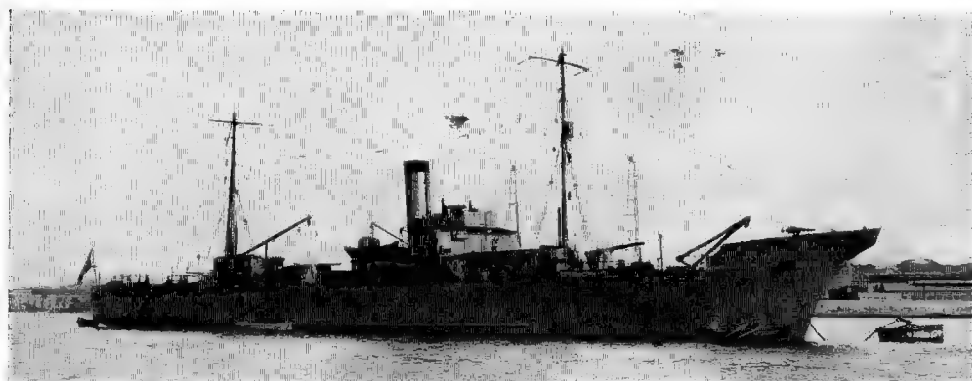
22 built by Private Yards :—

LASSIGNY (July, 1919) and **LES ÉPARGES** (September, 1919), both by Ch. de Bretagne, Nantes. **REMIREMONT** (July, 1920) and **REVIGNY** (September, 1920), both by Ch. de la Gironde, Bordeaux. **TAHURE** (—, 1919) and **TOUL** (April, 1919), both by Ch. de la Loire, St. Nazaire. **BACCARAT** (Jan., 1921) and **BÉTHUNE** (July, 1921), both by Ch. de Provence, Port du Bouc. **COUCY** (June, 1919), **ÉPINAL** (August, 1919), **VAUQUOIS** (August, 1919), **VIMY** (December, 1919) and **VITRY-LE-FRANÇOIS** (March, 1920), all five by Ch. de St. Nazaire, Penhoët. **AMIENS** (May, 1919), **CALAIS** (November, 1919), **CRAONNE** (January, 1920), **LIÉVIN** (March, 1920), and **MONTMIRAIL** (Sept., 1920), all five by F. et C. de la Méd., La Seyne. **ÉPERNAY** (September, 1919), **LUNEVILLE** (Jan, 1920), **MONDEMENT** (June, 1920), and **PÉRONNE** (March, 1920), all four by F. et C. de la Méd., Graville.

Despatch and Anti-Submarine Vessels of 760 tons. Dimensions : 246 ft. 0 in. × 28 ft. 6 in. × 9 ft. 2 in. Guns : 2—5.5 inch, 1—14 pdr. AA., 2 M.G. Carry depth charges. Fitted with from two to four searchlights; also have hydrophones. Designed S.H.P. 5000 = 21 kts. in oil-burning boats; = same speed in coal-burning boats. Machinery : 2 sets Parsons (geared) turbines. 2 screws. Boilers : 2 Normand or Guyot du-Temple oil-burning (small tube). Fuel : 200 tons oil = Endurance : 1000 miles at 17 kts. 3000 at 11 kts. *Craonne*, *Liévin*, *Montmirail*, *Mondement*, *Béthune*, *Baccarat* burn coal (185 tons carried). Complement, about 110.

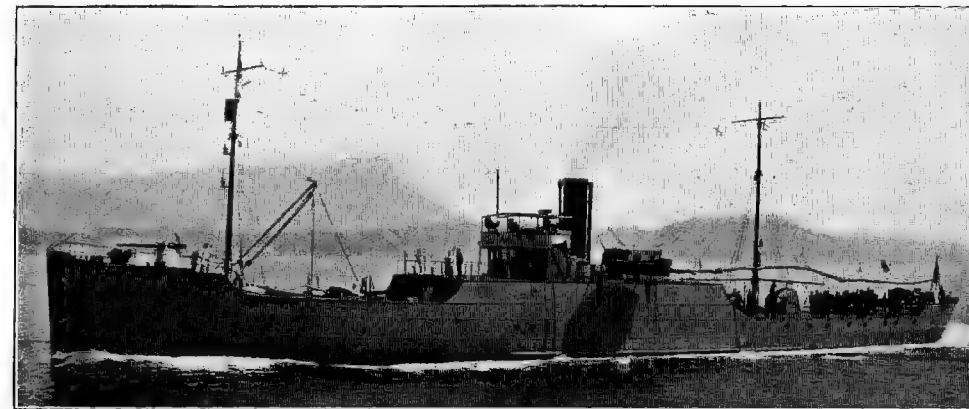
Notes.—5.5 inch guns reported to be M.1910 (and perhaps M.1916), but some have been armed with old 138 m/m. guns re-bored to 140 m/m. 5.5 inch have large degree of elevation; max. range 17,000 metres. They are very roomy and comfortable ships for their size, and their high bows make them very dry in head seas. But with sea on the beam, they are said to roll "like old boots" (*comme des véritables-sabots*), owing to heavy topweight of guns, superstructure, etc. Oil-burning boats can do 21-22 kts. on light draught in good weather, but in a seaway they drop down to 13 kts. Built under Programme VI and VII of 1917, and mostly completed 1919-21, though *Mondement* was not finished till 1922 and *Reims*, 1924. *Bar-le-Duc* wrecked and lost, December, 1920.

Special Note.—Following six were chartered by Latécoère Aviation Co. for service on the Cape Verd—Brazil section of the Toulouse—Buenos Aires Air Line, Sept., 1927 : *Belfort*, *Revigny*, *Epernay*, *Lunéville*, *Péronne*, *Reims*.



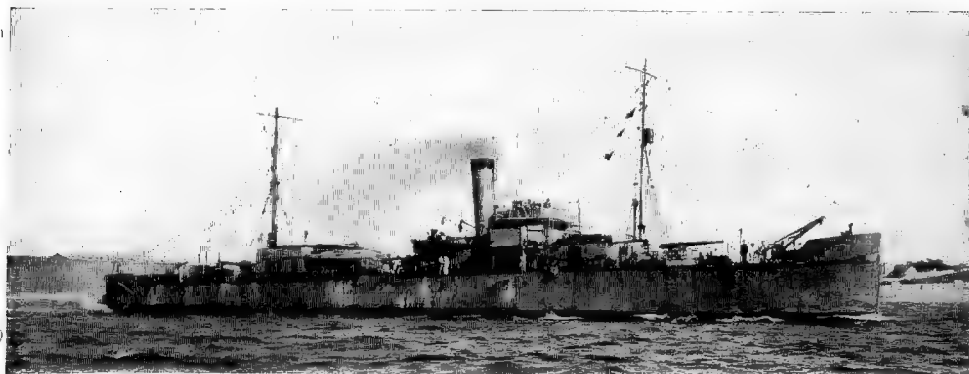
SCARPE (with Yacht bow).

1920 Photo, M. Bar, Toulon.



1924 Photo, A. Dussau, Toulon.

AILETTE (ESCAUT same). The 3.9 inch guns are concealed within lidded ports at angles of superstructure. AA. gun on forecastle.



SUIPPE (straight stem); ANCRE has same appearance.

1920 Photo, M. Bar, Toulon.

AILETTE (Brest D.Y., March, 1918)
ESCAUT (Brest D.Y., March, 1918)

} 580 tons.

ANCRE (Lorient D.Y., Jan., 1918)
SCARPE (Lorient D.Y., Oct., 1917)
SUIPPE (Lorient D.Y., April, 1918)

} 705 tons.

Dimensions: first two, $229\frac{1}{2} \times 25\frac{1}{2} \times 8$ feet; other three, $236\frac{1}{2} \times 27\frac{1}{2} \times 8$ feet. Guns: 4—3.9 inch, 2 to 6—9 pdr. A.A., 1 or 2 M.G. Designed H.P. 5000 = 21 kts. Machinery: 2 sets geared turbines. Boilers: two du Temple. 2 screws. Oil fuel: 140 to 145 tons = 4000 miles at 10 kts. Complement, 65.

Note.—Modifications of *Aisne*, *Marne*, *Meuse*, &c., described on a later page. Externally they are disguised by varying appearances as mercantile vessels, like convoy sloop *Ville D' Ys* opposite. Built under 1917 War Programme. *Ancre* is tender to Navigation School.



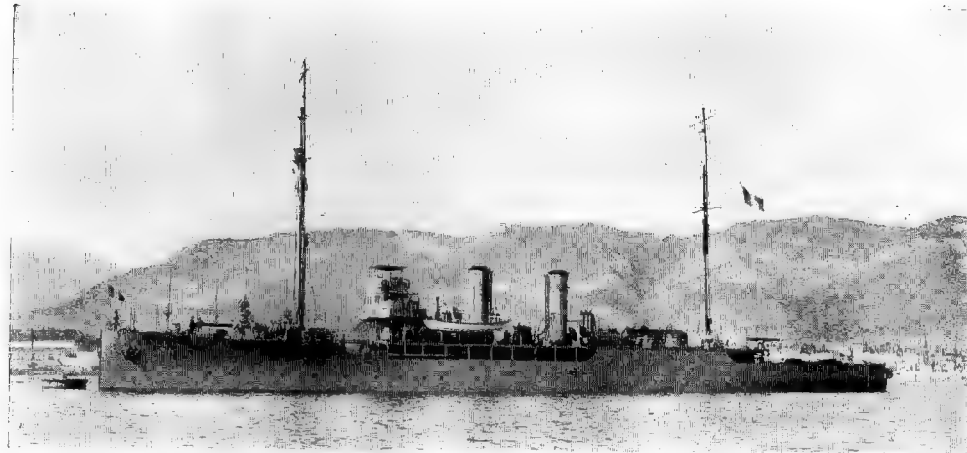
1921 Photo, Lieut. R. Steen Steensen, R.D.N.

VILLE D' YS (ex-*Andromède*), Swan Hunter & Wigham Richardson, Wallsend-on-Tyne, June, 1917. Convoy sloop of 1490 tons. Dimensions: 255 feet 3 inches (p.p.) 276 feet (o.a.) \times 35 feet \times 12 feet 3 inches. Guns: 1—3.9 inch, 3—3 inch A.A., 2—3 pdr. 1 M.G. Designed I.H.P. 2500 = 17 kts. Machinery: 1 set 4-cyl. triple-exp. Boilers: 2-cyl. 1 Screw. Coal: 270 tons = 2400 miles at 12 kts. Complement, 103.

Note.—Generally same build as British convoy sloops. Built under 1916 War Programme. Begun for British Navy as *Andromeda* and turned over to French Navy.

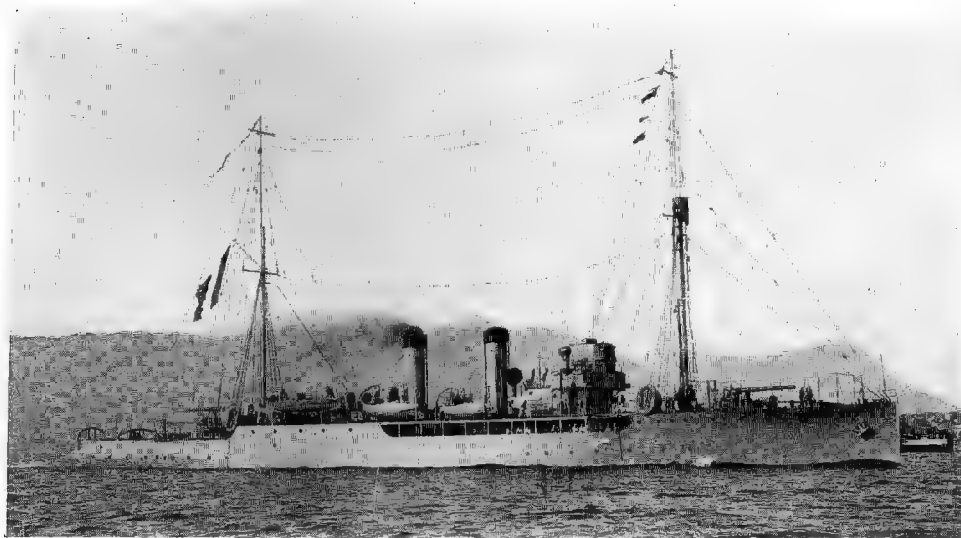
1916 "AVISOS"—SLOOPS OR DESPATCH VESSELS

Sloops.—FRANCE



ALGOL.

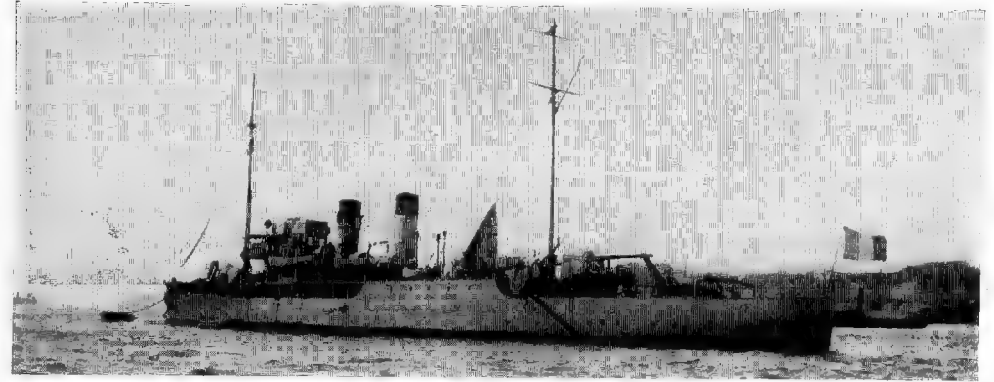
1920 Photo, M. Bar, Toulon.



ANTARÉS.

1920 Photo, M. Bar, Toulon.

("ÉTOILE" or "STAR" Class—7 Ships.)



RÉGULUS.

1921 Photo, H. Freund, Brest.

ALDÉBARAN (May, 1916)	} Barclay, Curle, Whiteinch. Wm. Hamilton, Port Glasgow.
ALGOL (June, 1916)	
ALTAIR (July, 1916)	
ANTARÉS (1916)	

BELLATRIX (Henderson, Glasgow, 1916).	} Barclay, Curle, Whiteinch.
CASSIOPEE (March, 1917)	
RÉGULUS (April, 1917)	

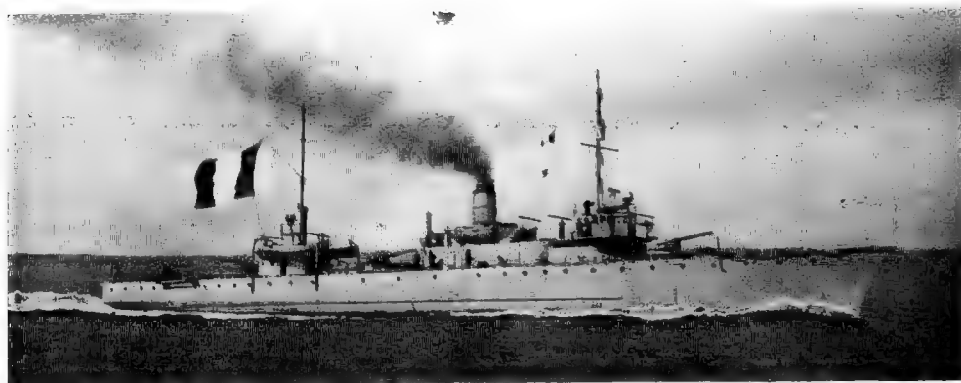
Sloops, displacing 1250, 1420 and 1470 tons. Dimensions : $255\frac{1}{2} \times 33\frac{1}{2} \times 11-12\frac{1}{2}$ feet. Guns : 2—5.5 inch, 2—14 pdr. (A.A.) or 2—3 pdr. and 1 A.A., 2 M.G. Are fitted as Fleet Sweeping Vessels. Designed I.H.P. 2500 = 17 kts. (All made 17.2-17.6 kts. on trials.) Machinery : 1 set, 4 cyl. triple expansion. Boilers : Cylindrical. 1 screw. Coal : 270 tons = 2400 miles at 12 kts. Complement, 103.

Notes.—These sloops are practically replicas of the British "Flower Class" Sloops, being built in pairs by British shipyards. *Rigel*, the companion boat to *Bellatrix* by Messrs. Henderson, lost during the War. All built under 1916 War Programme. On trials they made from 16.8 to 17.1 kts. with about 2675 H.P.

(Continued on next page.)

FRANCE—Despatch Vessels.

1916 "AVISOS"—DESPATCH VESSELS OR SLOOPS.



OISE (& SOMME).

1919 Photo.



YSER (& MEUSE).

1920 Photo, M. Bar Toulon.

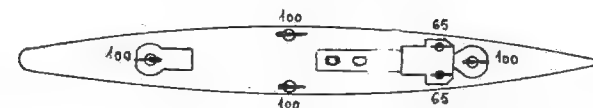
Note.

Though the design of these Despatch Vessels is uniform, the latitude allowed to the building yards has resulted in differing appearances. Vessels built by same yard have the same appearance.

AISNE (Lorient D.Y., July, 1917), 682 tons. **SOMME** (Brest D.Y., March, 1917), 730 tons.

MARNE (Lorient D.Y., Nov., 1916), 717 tons. **OISE** (Brest D.Y., Oct., 1916), 650 tons.

MEUSE (Rochefort D.Y. June, 1917), 670 tons. **YSER** (Rochefort D.Y., Jan., 1917), 670 tons.



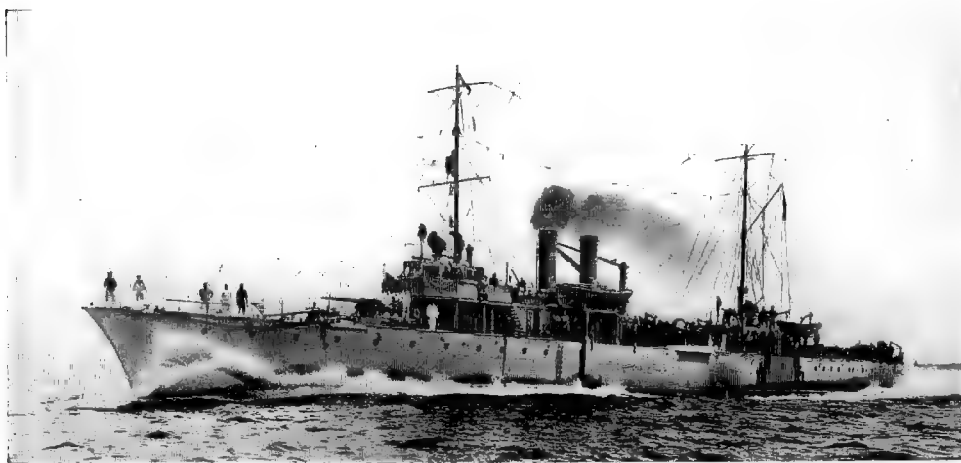
(Plan by courtesy of the Ministry of Marine.*)

Despatch Vessels, displacing 650-680 tons. Dimensions: 256 (o.a.) \times 26 $\frac{5}{12}$ \times 8 $\frac{5}{8}$ feet. Armament : *Aisne* and *Marne*, 4—3.9 inch, 3—47 m/m.; *Meuse*, 4—3.9 inch 2—65 m/m., 1—47 m/m.; *Somme*, 4—3.9 inch, 1—3 inch, 2—47 m/m.; *Oise*, *Yser*, 4—3.9 inch, 2—65 m/m., 2—47 m/m. Designed I.H.P. 4000=20.5 kts. (5000=21 in *Aisne* and *Marne*). Machinery : 2 sets geared turbines. Boilers : 2 du Temple. 2 screws. Oil fuel: 135 tons, 145 tons in *Aisne* and *Marne* = 4000 miles at 10 kts. Complement, 107. All built under 1916 War Programme.

*On Plans, 100 mm.=3.9 inch; 65 mm.=9 pdr.

† 21 in *Aisne* and *Marne*.

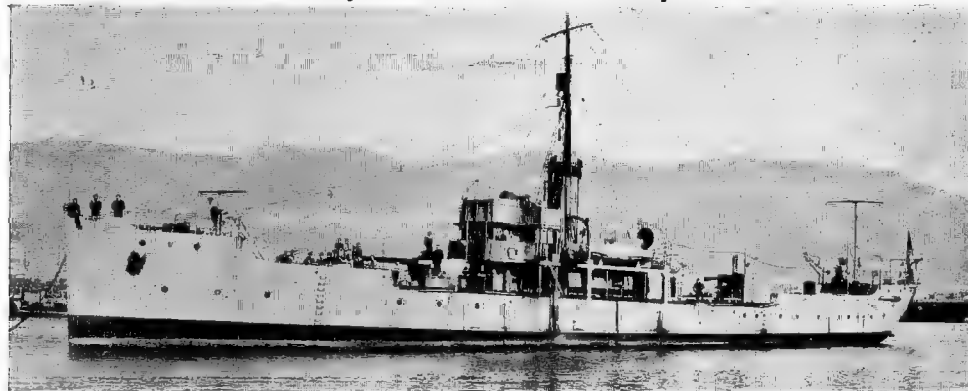
(Continued on next page.)



MARNE (& AISNE).

1919 Photo.

"Avisos"—Despatch Vessels or Sloops—continued.



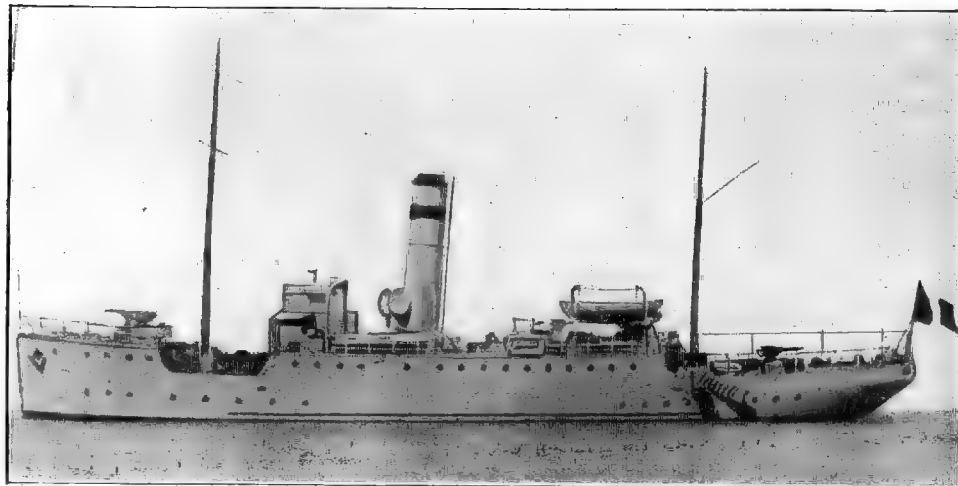
DUPERRÉ.

1921 Photo, M. Bar, Toulon.

"DUBOURDIEU" TYPE.—5 vessels.

DUBOURDIEU (April, 1918), **DUCHAFFAULT** (September, 1918), **DUPERRÉ** (December, 1918), **DUMONT-D'URVILLE** (November, 1918), **DUQUÉDIE** (April, 1919). Normal displacement, 500 tons. Dimensions: 210.8 (o.a.) × 26.2 × 8.75 feet (max. draught). Guns: 1—5.5 inch, 1—3.9 inch. S.H.P. 2000=17.4 kts. Machinery: 2 sets of Breguet de Wouch turbines. 2 screws. Boilers: 2 Du Temple-Guyot. Oil: 143 tons=1985 miles at full speed. Complement, 72.

Notes.—Built under 1917-18 War Programme. Completed June, 1919—May, 1920. Sixth boat of this class, *Décès*, cancelled. Originally rated as "Anti-Submarine Gunboats" (*Canonnières Contre Sous-marins*). In build they are very like *Arras* class. *Dubourdieu* is now tender to Boy Artificers Training Establishment at Lorient, and displaces 520 tons.



Q. ROOSEVELT.

1921 Photo.

(On Fishery Protection Service.)
QUENTIN ROOSEVELT (ex-*Flamant*, Rochefort D.Y., December, 1916). Despatch Vessel of 610 tons. Dimensions: 154 × 28 × 13 feet. Guns: 1—14 pdr., 1—1 pdr. I.H.P. 1100 = 13 kts. Coal: 100 tons = 1500 miles at 10 kts. Complement 53. Was begun 1913, stopped 1914-17 completed April, 1918.

Minesweepers (*Dragueurs de Mines*).



GRANIT.

1926 Photo, M. Bar, Toulon.

GRANIT CLASS—5 Steam-engined boats.

GRANIT, MICA, PORPHYRE, QUARTZ, MEULIÈRE (1918). 394 tons. Length, 189 feet: Draught, 6½ feet. H.P. 600 = 13 kts. Guns: 1—4.7 inch, 1—3 inch.



CONQUÉRANTE.

Note that masts are stepped well to starboard of centre line.

VAILLANTE type:—2 Diesel-engined boats.

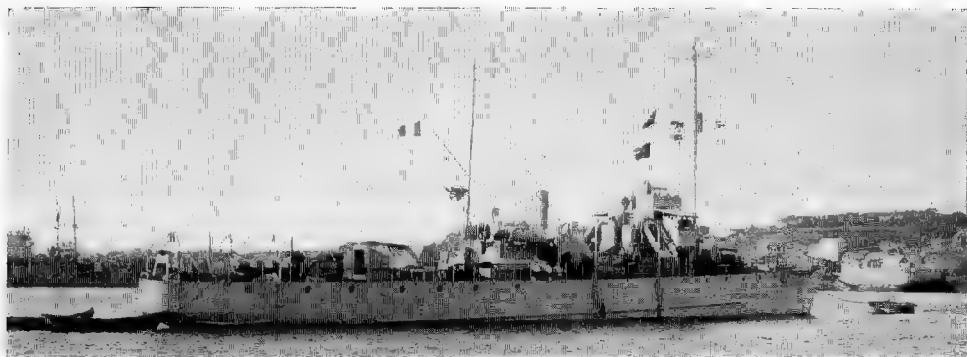
CONQUÉRANTE (1917), **VAILLANTE** (1917). Both by Brest D.Y. 457 tons. Dimensions: about 211 × 22½ × 8½ feet. Guns: 2—3.9 inch. Carry D.C. B.H.P. 1800 = 17 kts. Machinery: 2 sets of 900 B.H.P. Sulzer-Diesel engines. Oil fuel: 30 tons. Complement, 65.

Notes.—Are a modified *Fripoune* design, for which see next page. Both built under 1917 War Programme. Are ex-Gunboats, fitted as Mine Sweepers.

(Continued on next page.)

FRANCE—Minesweepers.

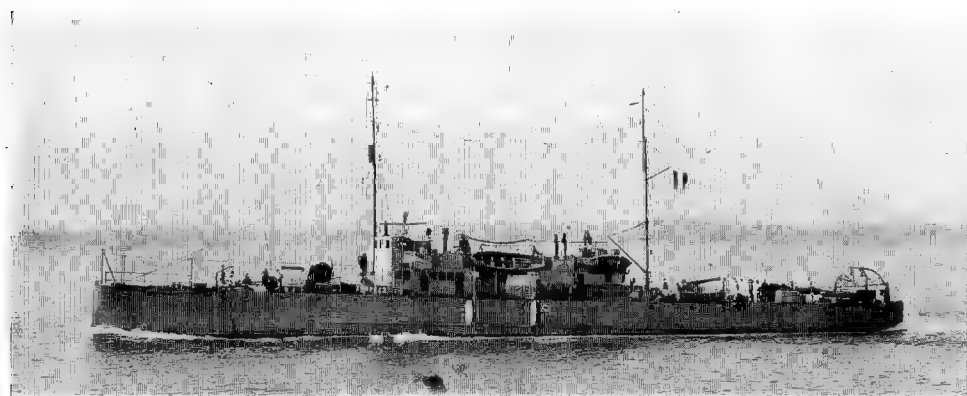
1916-17.



ENGAGEANTE only has dummy funnel.

Distinguished from *Conquerante* and *Vaillante* by yacht stem.

1920 Photo, H. Freund, Brest.



DILIGENTE (straight stem). } No
(*Luronne*, *Surveillante*, yacht stem.) } funnels.

1921 Photo, Dussau, Toulon.

FRIPONNE type:—4 Diesel-engined boats.

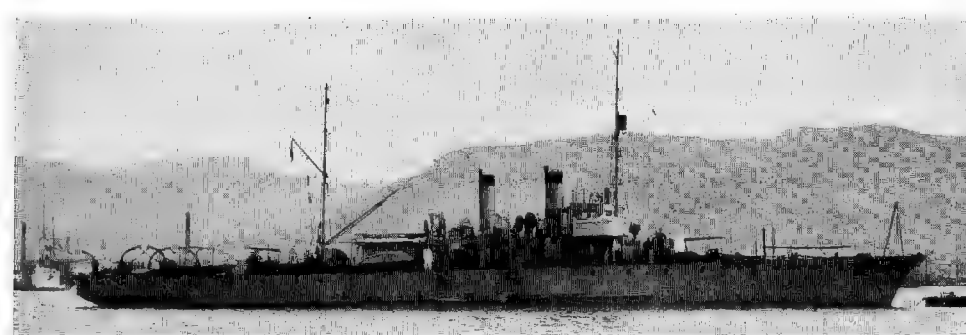
DILIGENTE (Brest D.Y., 1916), **ENGAGEANTE** (Brest D.Y., 1917), **LURONNE** (Brest D.Y., 1917), **SURVEILLANTE** (Brest D.Y., 1916). Displacement: 355 tons, except *Luronne*, 300 tons. Dimensions: $199\frac{1}{2} \times 22\frac{7}{8} \times 8\frac{1}{2}$ feet. Guns: 2—3.9 inch. Carry D.C. and may also be equipped as Mine Sweepers. B.H.P. 900* = 15 kts. Machinery: 2 sets 750* B.H.P. Sulzer* Diesel engines. Oil: 30 tons = 3000 miles at 10 kts., 1600 miles at 15 kts. Complement, 57.

Notes.—Generally the same design as the *Ardent* type (steam-driven) boats in next column, but above four boats have Diesel engines. All built under 1916 War Programme, except *Luronne*, of 1917 Programme. *Chiffonne*, *Friponne*, *Impatiente* and *Mignonne* sold to Rumania, January, 1920, *Bouffonne* condemned.

**Luronne* has two Fiat type Diesel engines of 650 B.H.P., total H.P. 1300, which are reported to have given a speed of 13.8 kts. She is employed as tender to the training establishment for boy artificers at Lorient.

MINESWEEPERS.

1916.



GRACIEUSE.

1921 Copyright Photo, M. Bar, Toulon.

(*ARDENT* type—15 Steam-engined boats.)

AGILE (Brest D.Y., 1916).

ALERTE (Rochefort D.Y., 1916).

ARDENT (Brest D.Y., 1916).

AUDACIEUSE (Port de Bouc, 1917).

BATAILLEUSE (Port de Bouc, 1917).

CAPRICIEUSE (Nantes, 1916).

DÉDAIGNEUSE (Bordeaux, 1916).

ETOURDI (Lorient D.Y., 1916).

ÉVEILLÉ (La Seyne, 1917).

GRACIEUSE (Lorient D.Y., 1916).

IMPÉTUEUSE (Ch. de la Gironde, Bordeaux, 1917).

INCONSTANT (Brest D.Y., 1916).

MALICIEUSE (Chantiers de Provence, Port de Bouc, 1916).

SANS SOUCI (Lorient D.Y., 1916).

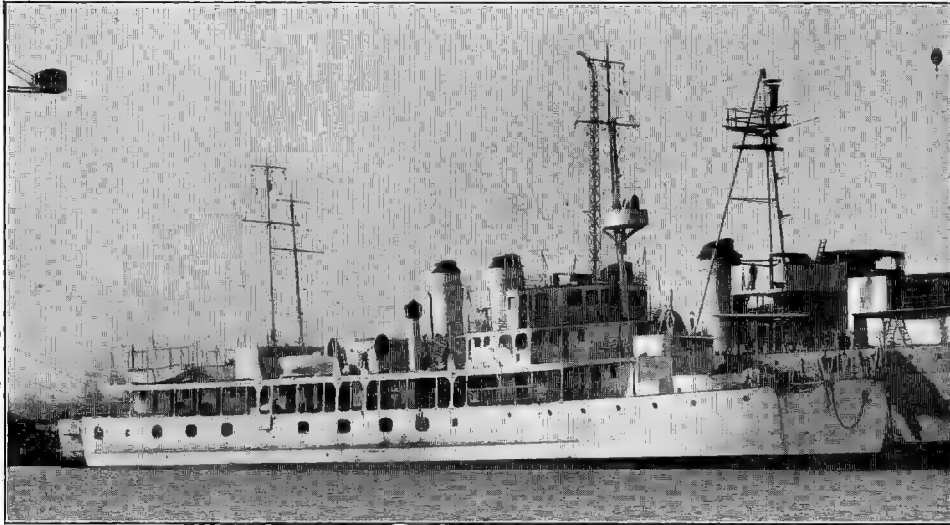
TAPAGEUSE (Port de Bouc, 1916).

Displacement: 350 tons. Dimensions: $197\frac{1}{2} \times 22\frac{7}{8} \times 8\frac{1}{2}$ feet. Guns: 2—3.9 inch (and 1 small AA. in some). Carry D.C. Designed I.H.P. 1800-1200 = 17 to 15 kts. Machinery: Reciprocating. Boilers: Various water-tube types. Fuel: 85 tons coal = 3000 miles at 10 kts., 1600 miles at full speed. Complement. 55.

Notes.—Built as Anti-Submarine Gunboats or “Canonnières Contre-Sousmarins.” Since the end of the War, these boats have been converted for Mine Sweeping Service. Some have been engined with machinery stripped from old Coastal Torpedo Boats (“Torpilleurs de Défense Mobile”). Note that masts are stepped well to starboard of the centre-line. *Audacieuse*, *Batailleuse* and *Impétueuse*, 1917 War Programme; all others, 1916 War Programme. As they were only built for the duration of the war, they are not expected to last long. *Moqueuse* wrecked, 1923. *Curieuse* condemned, 1926, *Belliqueuse* and *Emporté*, 1927. *Audacieuse* is tender to training establishment for boy artificers. *Alerte* was serving on Lower Yangtse pending completion of gunboat *Francis Garnier*, and has had her 4 inch guns fitted with shields.

River Gunboats (*Canonnières Fluviales*).

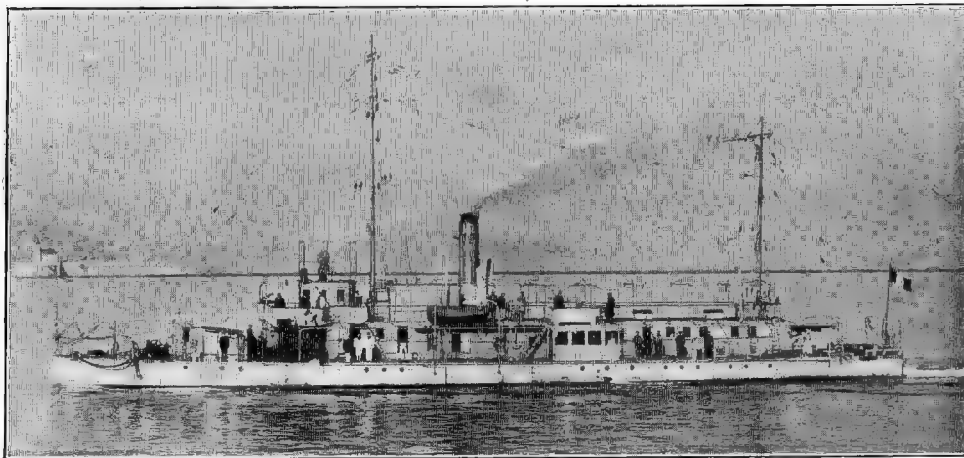
Note.—All boats on this page built for service in China, and carry their guns behind light shields.



FRANCIS-GARNIER.

1929 Photo, by favour of M. Henri Le Maçon.

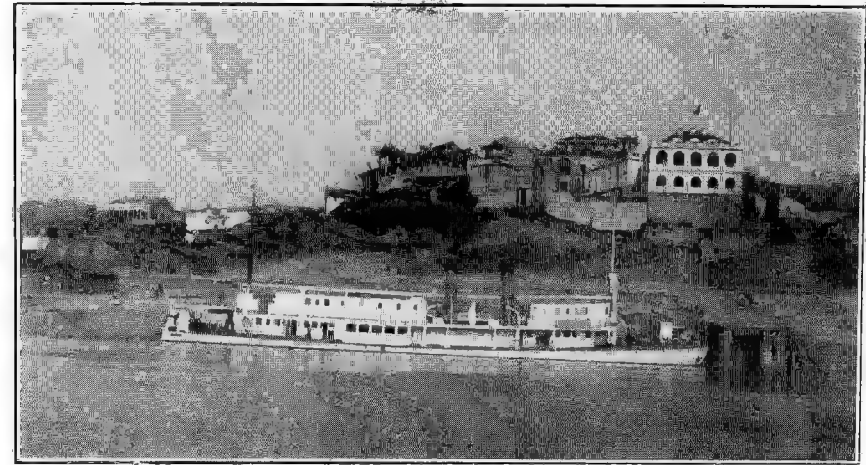
FRANCIS-GARNIER (Dec. 18, 1927). River Gunboat, for Lower Yangtse, ordered 1926 from Chantiers Navals Français, Blainville. Displacement, 750 tons. Complement 103. Dimensions: $196\frac{1}{2} \times 32\frac{3}{4} \times 6$ feet. Guns: 2—4 inch, 1—3 inch AA, 2—2 pdr. 4 M.G. 2 sets triple expansion, H.P. 3200=15 kts. 2 Du Temple boilers. Oil fuel: 100 tons. Completed in 1929.



VIGILANTE

1924 Photo, A. Dussau, Toulon.

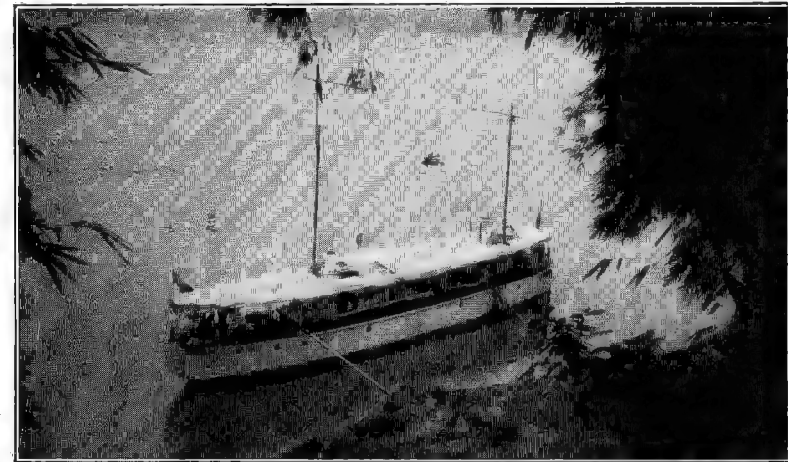
ARGUS, VIGILANTE (1922, Toulon D.Y.). About 190 tons. Dimensions: about $163\frac{1}{2} \times 25 \times 2\frac{1}{4}$ feet. Guns: 2—75 mm. (14 pdr.), 4 M.G. 1 H.P. 550=12 kts. 2 screws and 2 boilers Bullet-proof plating over conning position and W/T. cabinet. Ammunition carried: 300 rounds per 14pdr. and 50,000 cartridges.

River Gunboats—continued.

BALNY.

Photo added 1927, by favour of "Revue Maritime."

BALNY (1920). Built by Chantiers de Bretagne, Nantes. 232 tons. Dimensions: $167\frac{1}{2} \times 23 \times 3\frac{1}{4}$ feet. H.P., 800 = 13.5 kts. Guns: 1—14 pdr., 2—1 pdr., 4 M.G. 2 Fouché w.t. boilers. Coal: 50 tons. Complement, 60.

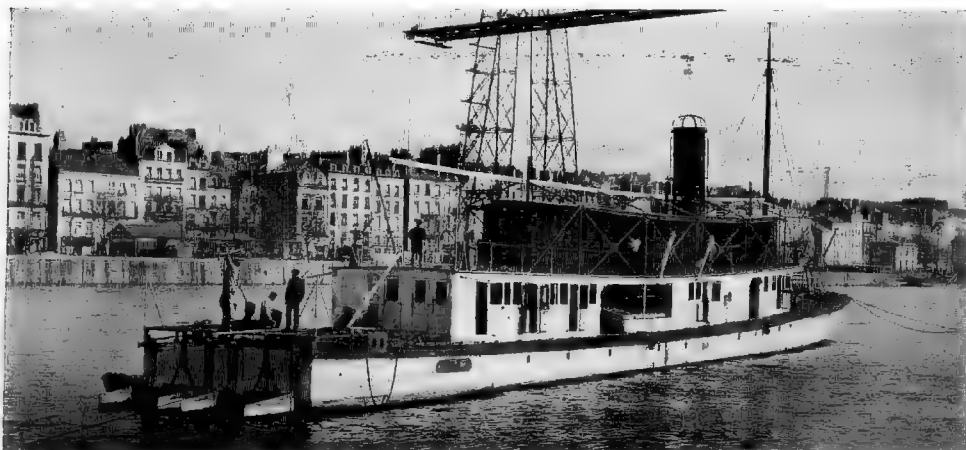


LAGRANDIÈRE.

Photo added 1927, by favour of "Revue Maritime."

LaGrandière (built at Brest D.Y.). Completed, 1923. 45 tons. Dimensions: $90.2 (o.a.) \times 16.4 \times 1.6$ feet. Guns: 2 M.G. Standard petrol motor 220 B.H.P.=12 kts. Serves as tender to *Balny* and *D. de Lagrée* for Upper Yangtse. Is said to be very expensive to run, as she consumes petrol in large quantities.

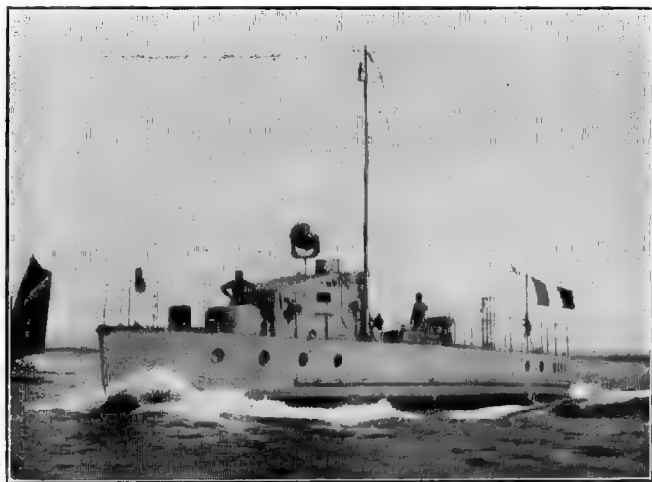
River Gunboats—continued.



1920 Photo, Ch. de Bretagne.

DOUDART DE LAGRÉE (1909). 214 tons $167\frac{1}{2} \times 22 \times 3\frac{1}{4}$ feet. Guns: 1—14 pdr. (field type), 4—1 pdr., 4 M.G. H.P. 920=14 kts. Fouché w.t. boilers. Coal: 50 tons. Complement, 60. Built by Chantiers de Bretagne, Nantes.

Rhine Flotillas.



C.F. 1.

1926 Photo, Freund, Brest.

C.F. 1 (Brest, 1926). Steel flat-bottomed "Chaloupe Fluviale." Displacement: 40 tons. Dimensions: About $60 \times 12 \times 4$ feet draught. Guns: 1—2 pdr. (short Army pattern), 2 M.G. 2 Bettus-Loire type semi-Diesel oil engines of 80 H.P. each = 10 kts.

C, G, H, I (1915). River Gunboats. 94 tons. $91.8 \times 16.4 \times 5$ feet. Armed with either 1—5.5 inch or 2—3.9 inch or 1—14 pdr. guns, besides some smaller. H.P. 200=7 kts. Coal: 10 tons. Complement, 25.

Rhine Flotilla—continued.



1927 Photo, R. Perkins, Esq.

9 small "Chaloupes à moteur" *PI—PIX* completed 1920, for service on the Rhine. Each armed with 2 M.G. Have petrol motors. No other details known.

Note.—2 armed River Passenger Steamers, *Klüber* and *Marceau* are also attached to Rhine Flotilla.

Summary Table.

72 + 14 (building) = 86 Flotilla Leaders and Destroyers.

Totals	Class.	First Begun.	Last Completed	Normal Displacement.	I.H.P.	Max. Speed.	Max. Coal or Oil	Comple-ment.	Max. Draught.	Tubes.
12	<i>D4—D15</i>	1928	<i>Bldg.</i>	tons. 2700	70000 t	kts 38	tons. 600 oil		feet.	6-
3	<i>Vauban</i> class	1927	1930	2780	72000 t	36	600 oil	...	$15\frac{3}{4}$	6
3	<i>Guépard</i> class	1927	1930	2690	65000 t	35	500 oil	220	15	6
6	<i>Chacal</i> class	1922	1926	2362	50000 t	35.5	540 oil	206	$14\frac{3}{4}$	6
1	<i>Amiral Sénès</i> †	1916	1918	2380	55000 t	34	720 oil	172	$14\frac{3}{4}$	4
14	<i>Adroit</i> class	1925	1929	1465	30000 t	33	350 oil	145	$12\frac{1}{2}$	6
12	<i>Simoun</i> class	1923	1926	1430	30000 t	33	350 oil	140	$12\frac{1}{2}$	6
2	<i>Delage</i> class†	1917	1919	1130	23800 t	33.3 t	332 oil	113	9 $\frac{1}{2}$	6
4	<i>Deligny</i> class†	1916	1918	1030	24500 t	34.6 t	305 oil	113	8 $\frac{1}{2}$	6
1	<i>Buino</i> †	1916	1918	1170	25509 t	34.7 t	330 oil	113	9 $\frac{1}{2}$	6
1	<i>Pierre Durand</i> †	1915	1917?	1100	23600 t	30.2 t	317 oil	113	9 $\frac{1}{2}$	6
1	<i>Matelot Leblanc</i> †	1915?	1917?	836	17000 t	32.5 t	95 coal and oil	102	9	4
12	<i>Algérien</i> class	1917	1917	690	10000	29	100+120	87	9 $\frac{1}{2}$	4
1	<i>E. Gabolde</i>	1913	1923	905	20000	33 t	200 oil	...	10	4
4	<i>Téméraire</i> class	1910	1914	950	18000 t	32 t	292+75	102	10 $\frac{1}{4}$	4
7	<i>Bory</i> class	1910	1915	880-780	17000-13500	31-30 t	200-140 oil	84	10	4
2	<i>Trident</i> class	1903	1911	415-340	6400	30 $\frac{1}{2}$ -28	80	71	11 $\frac{1}{2}$	2

t=turbines.

† Ex-Enemy boats taken over 1920.

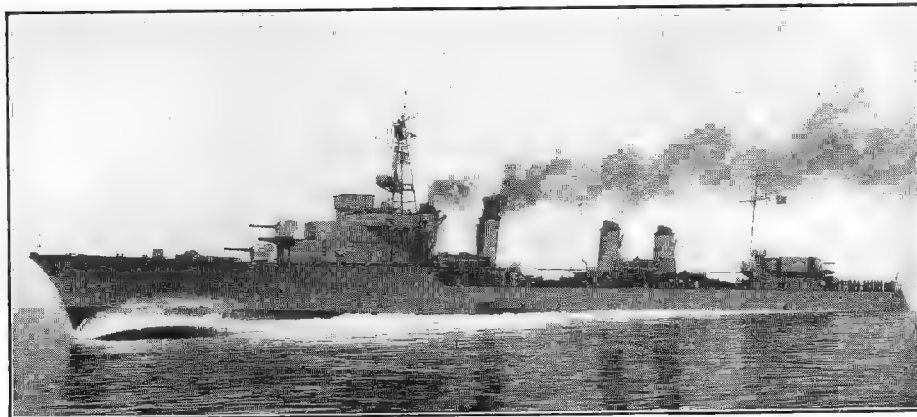
Details for most ex-German boats in these columns are *trial* figures.

Flotilla Leaders. (Rated as *Contre-Torpilleurs*.)

12 Aigle Class.

AIGLE, VAUTOUR, ALBATROS, GERFAUT, MILAN, EPERVIER, D10, D11, D12, D13, D14, D15. Displacement: 2480 tons *standard*; about 2700 tons *normal*. Designed H.P. 70,000 = 38 kts. 6 were begun in 1928, 6 in 1929. Builders: *Aigle*, Ch. de France, Dunkerque; *Vautour*, F. & Ch. de la Méditerranée, Gravelle; *Albatros*, A. & Ch. de la Loire, St. Nazaire; *Gerfaut*, Ch. de Bretagne, Nantes; *Milan*, *Epervier*, Lorient Dockyard.

3 Vauban Class.

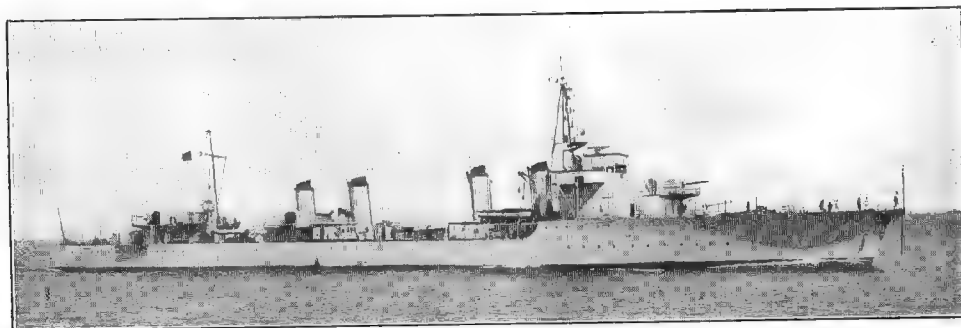


VERDUN.

1929 Photo, by courtesy of Builders, Ch. At. de St. Nazaire Penhoet.

Vauban (Chantiers de France, May, 1929), **Valmy** (At. & Ch. de St. Nazaire, Penhoet, May 19th, 1928), **Verdun** (At. & Ch. de la Loire, St. Nazaire, July 4th, 1928). All laid down 1927, under 1926 Programme. Displacement: 2780 tons (3100 tons *full load*); **Verdun**, as completed, 2700 tons. Dimensions: 423½ (p.p.), 466 (o.a.) × 39 × 15½ feet. Complement, 220. Guns: 5—5.5 inch, 4—1 pdr. AA., 4 Thornycroft D.C. throwers. Torpedo tubes: 6—21.7 inch, in triple deck mountings. Geared turbines. S.H.P. 72,000 = 36 kts. (*Verdun* reached 40.18 kts. on trials.) Oil fuel: 650 tons. Radius: 3000 miles at 18 kts. Other characteristics generally similar to *Guépard* type. *Valmy* and *Verdun* completed 1929, but *Vauban* will not be ready before 1930. **Gunnery Notes.**—All guns will be new models. Extreme range of 5.5 inch is reported as 25,000 yards. **General Notes.**—Reported to be very good sea boats able to maintain 35 kts. for a considerable time with a moderate wind and sea.

3 Guépard Class.



GUÉPARD.

1929 Photo, M. Bar, Toulon.

Bison (Oct. 29th, 1928), **Guépard** (April 19th, 1928), **Lion** (Aug. 5th, 1929). Laid down, first two, Feb., 1927, at Lorient, third, 1st April, 1927, by Ch. de France, at Dunkerque. Displacement: 2460 tons *standard*, 2690 tons *normal* (over 2900 tons *full load*). Dimensions: 404½ (p.p.), 434 (o.a.) × 38 × 15 feet. Complement, 220. Guns: 5—5.5 inch, 4—37 m/m. AA. Torpedo tubes: 6—21.7 inch, in triple deck mountings. 2 sets Parsons geared turbines by Indret (*Bison*), Zoelly by Elvies, Lille (*Lion*), and Parsons by F. & Ch. de la Méditerranée (*Guépard*). S.H.P. 65,000 = 35 kts. (38 kts. exceeded on trials.) Oil: 500 tons. 4 small tube boilers. Other particulars similar to those of *Chacal* class, but boiler power increased.

Note.—Authorised by Law of 13th July, 1925. Are enlarged *Chacals*, and when completed will be the largest and most heavily armed Flotilla Leaders afloat. 4 Thornycroft D.C. throwers are included in armament. Standard displacement is 2460 tons. Completion fixed for 1929, for first two, 1930 for *Lion*. Gun mountings and supporting bases have been strengthened to enable salvo firing to be conducted without danger of straining hulls.

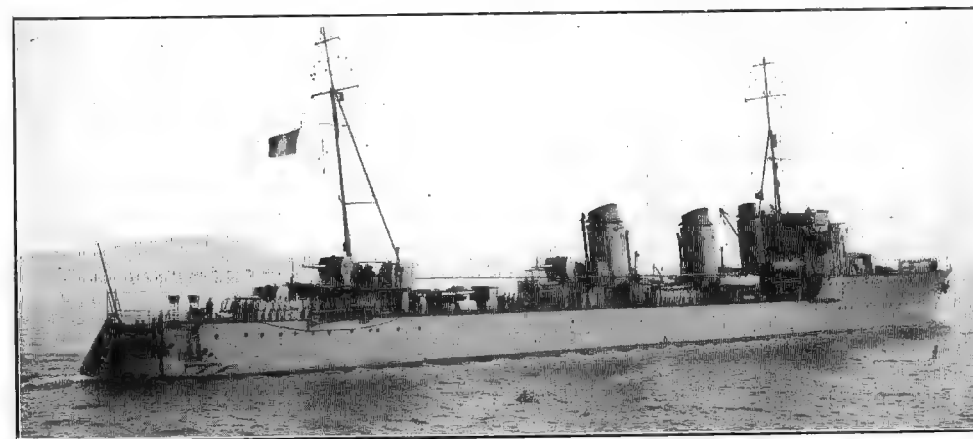
FLOTILLA LEADERS. (Rated as *Contre-Torpilleurs*.)

6 Chacal Class.



TIGRE.

1926 Photo, M. Bar, Toulon.



TIGRE.

1926 Photo, M. Bar, Toulon.

Note that 2nd and 3rd funnels are actually pairs within single casings.

6 New Boats: **Jaguar** (7th Nov., 1923), **Panthère** (28th Oct., 1924), **Léopard** (20th Sept., 1924), **Lynx** (24th Feb., 1925), **Chacal** (13th July, 1924), **Tigre** (2nd August, 1924). 2362 tons *normal* (2700 *full load*). Dimensions: 392½ (p.p.), 416 (o.a.) × 36 × 14½ feet. Complement, 204. Guns: 5—5.1 inch, 2—2.9 inch AA. Torpedo tubes: 6—21.7 inch, in triple deck mountings. S.H.P. 50,000 = 35.5 kts. Breguet (*Léopard* and *Lynx*) or Rateau turbines (other 4). 5 small tube boilers. Oil: 250/540 tons. Radius: 3500 miles at 15 kts.; 2500 miles at 18 kts.; 900 miles at *full speed*. Consumption at *maximum* speed (37 kts.) is about 27 tons per hour. **Notes.**—Authorised by Law of 18th August, 1922. First two built at Lorient Dockyard; next pair by A. & C. de la Loire, St. Nazaire; *Chacal* by A. & C. de St. Nazaire (Penhoet); *Tigre* by Ch. de Bretagne, Nantes. *Tigre* on 8 hours' trial displaced 2564 tons and averaged 52,000 = 35.93 kts. (best hour, 58,000 = 36.7). *Panthère* averaged 35.5 kts. on 8 hours' trial, *Lynx* 35.5 kts., *Chacal* and *Jaguar* 35.6 kts. (best hour, 52,000 = 36.1). *Chacal* has reached 37 kts. in service. All completed 1926, except *Léopard* and *Lynx*, 1927. Built on same lines as *Duguay-Trouin*, with dimensions reduced. Standard displacement is 2160 tons. Have steamed excellently in service, maintaining 32–33 knots easily at full load.

Gunnery Notes.—Rate of fire of 5.1, about 8 rounds per minute. Normal command: No. 1 gun, 23 feet; No. 2 gun, 27½ feet. At high speed, bows rise considerably, and command and elevation are correspondingly increased. 4 Thornycroft D.C. throwers are included in armament.

Jaguar and *Panthère* have been fitted with gun shields of larger size.



FRANCE—Destroyers.

DESTROYERS. (Rated as *Torpilleurs*).

1 ex-German Boat. ("1916 Design.")



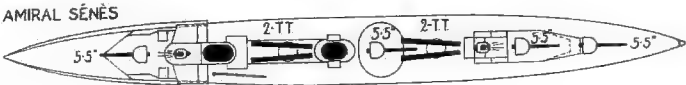
1922 Photo.

1 *Schichau, Danzig*: **Amiral Senez** (ex German *S 113*, launched 1917, completed May, 1918). 2380 tons*. Dimensions: 334½ × 36 × 13 feet draught aft. Guns: 4—5.9 inch (45 cal.). Torpedo tubes: 4—21.7 inch, in two twin deck mountings. Machinery: Turbine. Boilers: 4 Marine type (by Schichau). Designed S.H.P. 44,000=34 kts. (trial gave 36.9 kts.) 2 screws. Oil fuel: 210 tons *normal*, 720 tons *max.*=2500 miles at 20 kts. *Full load; *normal* is 2100 tons.

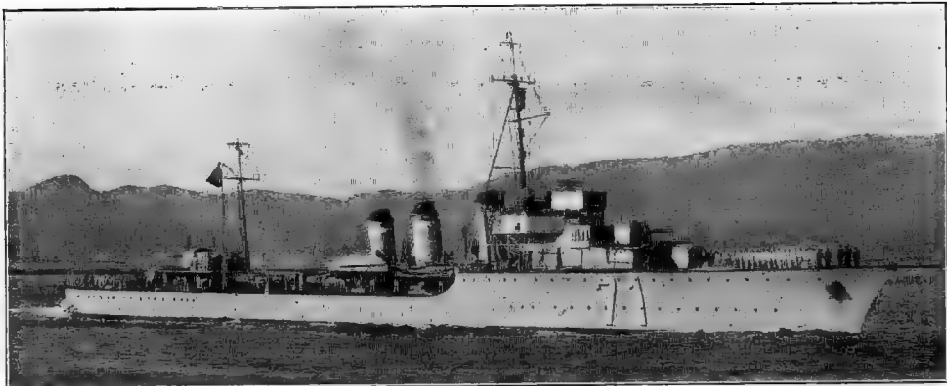
Gunnery Notes.—5.9 inch have large degree of elevation and can be used as A.A. guns. German directors, fire controls, R.F. and electric transmitters, etc., stripped before surrender.

Torpedo Notes.—Tubes, 32 feet long, electrically operated, and with special electric motors for loading. Axes diverge 15°.

General Notes.—Originally a unit of the German "1916 Design" Class (*S 113—B 124*). A sister boat (*V 116*) now Italian *Premuda*. The class represents the largest and most powerful Destroyer type extant, but their sea performance as first completed was very bad indeed. Ran trials during spring of 1918, when engines and armament proved too powerful and heavy for the hull; they were sent back to the yards for alterations. The Germans are said to have lengthened these boats by about 11½ feet at bows in an attempt to improve stability. They never joined German Flotillas during the war. French reports also say they never got beyond 30 kts. on trials. Hull strengthening and minor modifications are reported to have considerably improved the qualities of *Amiral Senez*, and she is now good for 32 kts.



14 Adroit Class.



LE MARS. (Funnels have been cut down by over 3 feet.)

1929 Photo, M. Bar, Toulon.

L'Adroit (April 6th, 1927).

Le Fortuné (Nov. 15, 1926), **Le Mars** (Aug. 28, 1926).

La Palme (June 30th, 1926), **La Railleuse** (Sept. 12th, 1926).

L'Alcyon (June 26th, 1926). (Launched at Harfleur and towed to Bordeaux for completion.)

Basque (May 25th, 1929), **Bordelais** (May 23rd, 1928), **Boulonnais** (June 1st, 1927), **Brestois** (May 10th, 1927).

Forbin (July 17th, 1928), **Foudroyant** (April 24th, 1929), **Fougueux** (Aug. 4th, 1928), **Frondeur** (June 20th, 1929).

Displacement: 1390 tons *standard*, 1495 tons *normal* (about 1750 *full load*). Dimensions: 353 (*p.p.*), 367½ () × 32½ × 12½ feet. Complement, 145. Guns: 4—5.1 inch, 1—2.9 inch A.A. (last eight to carry 2—37 m/m. A.A. instead of latter gun). Torpedo tubes: 6—21.7 inch, in triple deck mountings. 2 sets geared turbines of Zoelly type in *Adroit* and *Alcyon*, Parsons in *Brestois* (types not yet advised in other cases). Designed H.P. 34,000 = 33 kts. Other particulars similar to those of *Simoun* class, but slightly increased boiler power is expected to give improved speed. On trials *Brestois* reached 34.5 kts, *L'Alcyon* 33.65, *Bordelais* 32.5, *Fougueux* 36.4. 16 Depth Charges carried. }

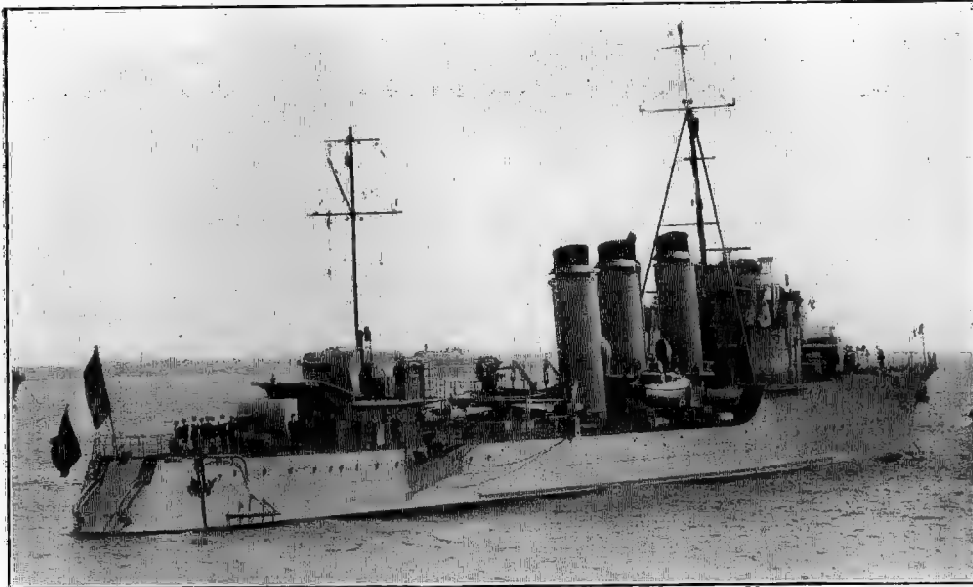
Note.—Ordered under Programmes of 1924 (first six), 1925 (next four), and 1926 (last four). As compared with *Simoun* type, these vessels possess improved stability, higher rate of salvo firing, better aerial defence and lower fuel consumption. 5.1 inch guns said to possess a range of 19,000 yards.

Name	Builders	Engines	Began	Completed
<i>L'Adroit</i>	Ch. de France, Dunkerque	Fives, Lille	1925	1928
<i>L'Alcyon</i>	Ch. de la Gironde	Ch. de la Gironde		1927
<i>Le Fortuné</i>	Ch. Navals Français, Blainville	A. & Ch. de la Loire		Sept., 1927
<i>Le Mars</i>	Ch. Navals Français, Blainville	A. & Ch. de la Loire		April, 1927
<i>La Palme</i>	Ch. Dubigeon, Nantes	A. & Ch. de la Loire	Sept., 1926	1927
<i>La Railleuse</i>	Ch. Dubigeon, Nantes	A. & Ch. de la Loire		1927
<i>Brestois</i>	Ch. Navals Français, Blainville	A. & Ch. de la Loire		1928
<i>Boulonnais</i>	Ch. Navals Français, Blainville	A. & Ch. de la Loire		
<i>Basque</i>	Ch. de la Seine Maritime	A. & Ch. de Bretagne	1927	1929
<i>Bordelais</i>	Ch. de la Gironde, Bordeaux	Ch. de la Gironde		
<i>Forbin</i>	F. & Ch. de la Méd., Havre			
<i>Foudroyant</i>	Dyle & Bacalan, Bordeaux			
<i>Fougueux</i>	A. & Ch. de Bretagne, Nantes			
<i>Frondeur</i>	Ch. Navals Français, Blainville	A. & Ch. de la Loire		

DESTROYERS.

Destroyers—FRANCE

12 Simoun class.



OURAGAN.

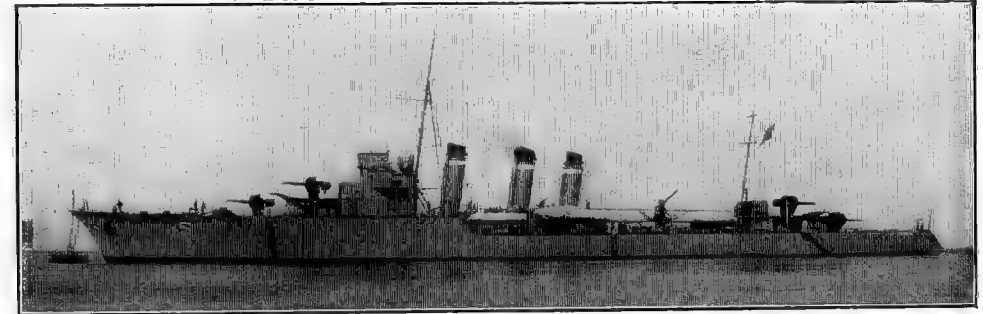
1927 Photo, Cribb.



TEMPÊTE.

1927 Official Photo.

Simoun class—continued.



SIMOUN.

1926 Photo.

- 1 Chantiers de France (Dunkerque): **Bourrasque** (Aug. 5th, 1925).
- 2 P. & Ch. de la Méditerranée (Havre): **Cyclone** (Jan. 24th, 1925), **Mistral** (June 6th, 1925).
- 2 Ch. Navals Français (Blainville): **Orage** (Aug. 30th, 1924), **Ouragan** (Dec. 6th, 1924).
- 2 A. & Ch. de St. Nazaire (Penhoët): **Simoun** (June, 1924), **Sirocco** (October 6th, 1925).
- 1 Ch. Dubigeon: **Tempête** (Feb. 21st, 1925).
- 3 Ch. de la Gironde: **Tramontane** (Oct. 29th, 1924), **Typhon** (Nov. 1924), **Trombe** (May 22nd, 1925).
- 1 Dyle & Bacalan: **Tornado** (March 12th, 1925).

Displacement: 1340 tons *standard*, 1458 tons *normal*, 1727 tons *full load*. Dimensions: 326 × 31½ × 12½ ft. Complement, 146. Guns: 4—5.1 inch, 1—2.9 inch AA. Torpedo tubes: 6—21.7 inch, in triple deck mountings. Geared turbines of Rateau type in *Orage* and *Ouragan*; Zoelly in *Typhon*, *Tramontane* and *Trombe*; Parsons in other seven boats. H.P. 33,000 = 33 kts. (over 34 reached on trials). Boilers: 3 small tube. 2 screws. Oil: 165 tons *normal*, 350 tons *max*. Radius: 3000 miles at 15 kts.

Notes.—Authorised by Law of 18th August, 1922. 8 hours' trials: *Orage*, 34,000 = 33.8 kts.; *Simoun*, 29,000 = 33.2 kts. (1 hour = 34.3); *Ouragan*, 35,000 = 34.4; *Bourrasque*, = 34.12 (36.4 for one hour); *Mistral* (12 hours), 34 kts. All completed 1926-27. It has been stated that these vessels lose their speed rapidly in a seaway. All are having funnels cut down, 1929.

Gunnery Notes.—*Sirocco* has been fitted experimentally with larger gun shields. All are being given bilge keels, increasing displacements as stated above by 20 tons without any reduction of speed.



Distinguishing Numbers

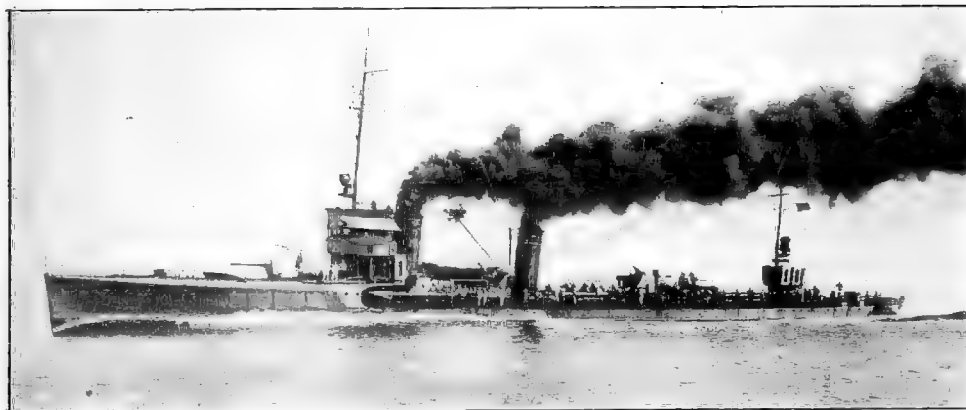
borne by vessels of *SIMOUN* and *ADROIT* classes.

1st Flotilla (Blue).		3rd Flotilla (Red).		5th Flotilla (Black).		7th Flotilla (White).	
<i>Tempête</i>	11	<i>Tornado</i>	31	<i>Cyclone</i>	51	<i>Le Mars</i>	71
<i>Ouragan</i>	12	<i>Trombe</i>	32	<i>Mistral</i>	52	<i>Le Fortuné</i>	72
<i>Orage</i>	13	<i>Typhon</i>	33	<i>Sirocco</i>	53	<i>La Railleuse</i>	73
<i>Bourrasque</i>	14	<i>Tramontane</i>	34	<i>Simoun</i>	54	<i>La Palme</i>	74

FRANCE—Destroyers.

DESTROYERS (EX-ENEMY TYPES). All re-fitted in 1928-29.

2 Delage Class (ex-German "Mobilisation" type).



R. DE LA TOUCHE.

1925 Photo, by courtesy of the Ministry of Marine.

2 *Howaldt* boats: **Delage** (ex-German *H 147*) and **Rageot de la Touche** (ex-German *H 146*). Dimensions: 279.8 × 27.4 × 9.3 feet. Guns (German): 2—4.1 inch, 45 cal. "Flak" (A.A. mountings). Torpedo tubes (German): 6—19.7 inch, in two single tubes to port and starboard, under bridges, and two twin mountings amidships. Oil fuel: 186 tons *normal*, 330 tons *max.* = 1760 miles at 20 kts. Surrendered at Cherbourg and added to French Navy, September, 1920. (Other details as Table.) Were units of German *H 145—147* class. Can carry 40 mines.

To distinguish.—Boats carried "flying"; derrick-post close to *after* funnel with boom slung forward. Compass platform before amidships bandstand.

4 Deligny Class (ex-German "Mobilisation" type).

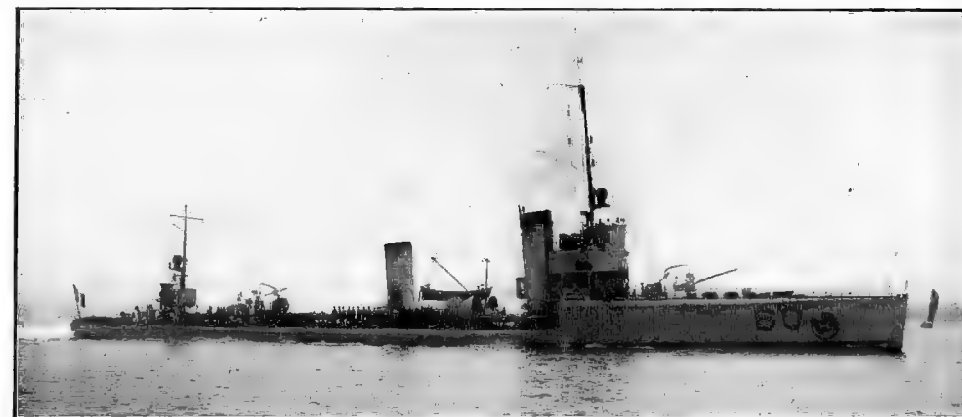


DELIGNY.

1925 Photo, by courtesy of the Ministry of Marine.

4 *Schichau* (Elbing) boats: **Chastang** (ex-German *S 133*), **Deligny** (ex-German *S 132*), **Mazare** (ex-German *S 131*) and **Vesco** (ex-German *S 134*). Dimensions: 272.3 × 27.3 × 8.4 feet. Guns and torpedo tubes: As *Delage* class above. Oil fuel: 162 tons *normal*, 305 tons *max.* = 1760 miles at 20 kts. Surrendered at Cherbourg and added to French Navy, September, 1920. Other details as Table. Were units of German *S 131—139* class. To distinguish.—Derrick-post close to *fore* funnel with boom slung aft. No compass platform.

1 Vulkan Boat (ex-German "Mobilisation" type).



1925 Photo, by courtesy of the Ministry of Marine.

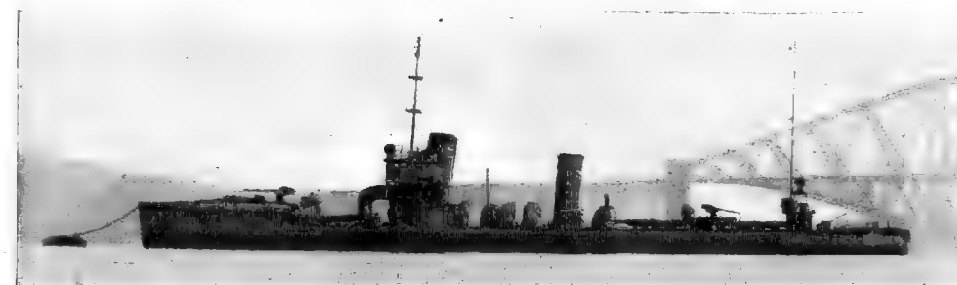
1 *Vulkan* (Stettin) boat: **Buino** (ex-German *V 130*). Dimensions: 269 × 27.2 × 9.2 feet. Guns and torpedo tubes: As *Delage* class. Oil: 167½ tons *normal*, 330½ tons *max.* = 2050 miles at 15 kts. Other details as Table. Surrendered at Cherbourg and added to French Navy, September, 1920. Was unit of German *V 125—130* class. Can carry 24 mines.

To distinguish.—Derrick-post *midway* between funnels with boom slung aft. Ventilator just aft of second funnel, plus long unbroken forecastle.

DELAGE and DELIGNY types and BUINO.



1 Vulkan Boat (ex-German "Mobilisation" type.)



1920 Photo, G. Doll, Esq.

1 *Vulkan* boat: **Pierre Durand** (ex-German *V 79*). Dimensions: As *Buino*, above. Guns and torpedo tubes: as *Delage* class, but single tubes are before bridges. Oil: 160½ tons *normal*, 317½ tons *max.* = Radius: 2060 miles at 15 kts, 656 miles at 22 kts. Surrendered at Cherbourg and added to French Navy, September, 1920. Was unit of German *V 67—84* class.

To distinguish.—Single forward tubes are mounted in well before bridges, and between these tubes, arched ventilating trunk. Ventilator and compass platform just aft of second funnel, plus short forecastle. Derrick-post *midway* between funnels, with boom slung aft.

1 Ganz-Danubius Boat.



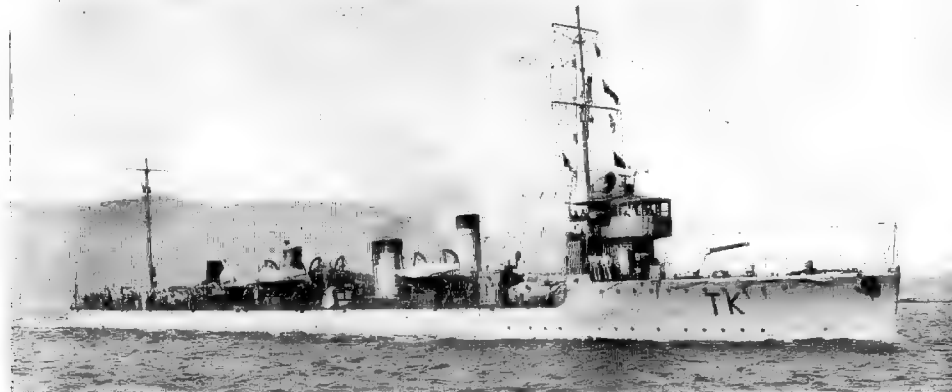
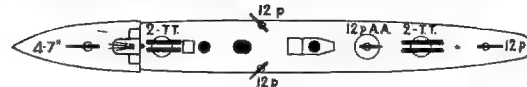
MAT. LEBLANC.

1929 Photo, M. Bar, Toulon.

1 Ganz-Danubius (Flume) boat: **Matelot Leblanc** (ex-Austrian *Dukla*). Dimensions: 275 × 257 × 8'3 feet. Guns (Austrian): 2—3'9 inch, 4—11 pdr., 2—11 pdr. AA. Torpedo tubes (Austrian): 4—20'8 inch. Other details as Table. Towed from Cattaro to Bizerta and added to French Navy, September, 1920. Was unit of Austrian *Tatra* class. Five sister boats incorporated in Italian Navy. (For plan, vide Italian *Cortelazzo* class).

12 Algérien Class.

(1917 War Programme.)



TONKINOIS.

1920 Copyright Photo, M. Bar, Toulon.

12 built by Japanese Yards: **Algérien, Annamite** (both by Yokosuka D.Y.), **Arabe, Bambara** (both by Kure D.Y.), **Hova, Kabyle** (both by Sasebo D.Y.), **Marocain, Sakalave, Senegalais** (all three by Maizuru D.Y.), **Somali** (Kawasaki Co., Kobe), **Tonkinois, Touareg** (both by Mitsui Bishi Z.K.). All begun March, 1917, launched May and July, 1917, and completed July and September, 1917. Average time of construction 5 months. Displacement, 690 tons *normal*, 830 *full load*. Dimensions: 260 (p.p.), 271½ (o.a.) × 27½ × 7½ feet. *Normal* draught, 9½ feet; *load* draught, 8 feet. Armament: 1—4'7 inch, 4—12 pdr. (one 12 pdr. is AA.), 2 M.G. and 4—18 inch torpedo tubes in two twin deck mountings. Designed H.P. 10,000=29 kts.; made about 30 on trials. Machinery: 3 sets 4-cyl. triple expansion. 4 Kansel (Modified Yarrow) boilers. Fuel: 100 tons coal + 120 tons oil = 3000 miles at 15 kts. and 950 miles at *full speed*. Complement, 87.

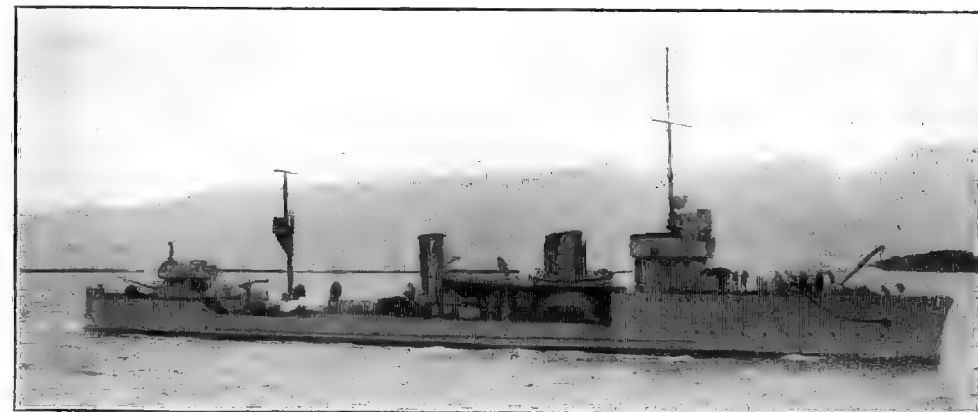
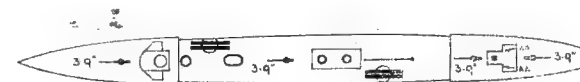
Note.—These boats are practically replicas of the Japanese *Kaba* class T.B.D. and are often referred to as the "Type Japonais." The 4'7 inch gun is being replaced by a 3'9 inch of superior range. (In *Marocain* this change has already been effected.) Radius: 1950 miles at 14 kts., 1200 miles at 22 kts. Made 27 kts. at sea after refit (1925), but now good for only 25-26 kts. at best.

4 Téméraire type:—Purchased Boats.

(Fitted for Minesweeping).

OPINIÂTRE. (*Téméraire* similar).

1920 Photo, Bar, Toulon.

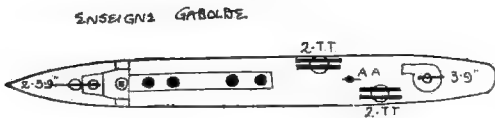
Note.—Now have raised fore funnel.INTREPIDE. (*Aventurier* similar).

1928 Photo, M. Dubois.

4 Chantiers de Bretagne (Nantes): **Aventurier** (ex-Salta), **Intrepide** (ex-Rioja), **Opiniâtre** (ex-San Juan), and

Téméraire (ex-Mendoza) (all 1911). *Normal* displacement: 950 tons; *full load*, 1180 tons. Dimensions: 284½ × 28½ × 8½ feet *normal* draught. *Full load* draught, 10½ feet. Armament (Schneider-Canet): 4—3'9 inch, 2—3 pdr. AA., *Opiniâtre* and *Téméraire* only 1—3 pdr. 4—18 inch tubes. Designed H.P. 18,000 32 kts. (light). First pair now develop 18,000 H.P. = 27 kts. at *full load*; second pair H.P. 12,000 = 22 kts. Machinery Rateau-Bretagne turbines. 5 Schulz-Thornycroft boilers in first pair, Du Temple in second pair. Fuel capacity: 240 tons coal+75 oil, in *Opiniâtre* and *Téméraire*; 280 tons oil in *Aventurier* and *Intrepide*. Radius of action: 3,000 miles at 15 kts.

Note.—Built for Argentine Navy and purchased by France immediately before outbreak of war. Refitted 1924-27 and *Aventurier* and *Intrepide* reboilered with boilers out of German Destroyers broken up, and are good now for a maximum speed of 27 kts. All are now fitted for minesweeping, and constitute a special division.



1 Special Boat. (1913 Programme).

Note.—Torpedo tubes now mounted on centre line, not as in plan.

1 Normand. Havre: **Ensigne Gabolde** (22nd April, 1921). 905 tons. Dimensions: 269×26·9×10 feet. Armament: 3—3·9 inch, 1—11 pdr. AA, 4—21·7 inch torpedo tubes in two twin deck mountings. Designed H.P. 20,000=33 knots (reached on trials). Parsons geared turbines. Normand boilers. Fuel: 200 tons oil. Complement, 98.
Note.—Began in December, 1913. Work on this T.B.D. was suspended during the War and not resumed until September, 1918. Completed in summer of 1923 and joined Fleet early in 1924. 6 hours' trial=32·45 kts. (max 33·45). Forward superfiring 3·9 inch reported to have proved an unsatisfactory arrangement.



ENSEIGNE GABOLDE.

1925 Photo, by courtesy of the Ministry of Marine.



E. GABOLDE.

1925 Photo, by courtesy of the Ministry of Marine.

7 Bory Type.

General Note.—All these boats are armed with 2—3·9 inch, 4—9 pdr., 1—11 pdr. (AA), 4—18 inch tubes in pairs. All adapted for mine sweeping and carry D.C. Endurance: about 1,500 miles at 15 kts. and 400—500 at full speed. Complement, 98. They differ according to builders in appearance, dimensions, H.P., turbines, &c.



War Losses: *Boutefeu, Faulx, Fourche, Renaudin.*

Removed from List: *Magon, Francis-Garnier, Capitaine Mehl, Commandant Bory, Dehorter.* (1913 Programme).



M. P. LESTIN (of Bory class described in next column).

1921 Photo, H. Freund, Brest.



E. ROUX.

1920 Photo, M. Bar, Toulon.

2 Rochefort Dockyard: **Ensigne Roux** (1915), **Mecanicien-Principal Lestin** (1915). 880 tons. Dimensions: 271×29·9×10 feet. Designed H.P. 17,000=30 kts. Fuel: 200 tons oil. Endurance for these two boats:—about 2,000 miles at 15 kts. and 550 miles at full speed. Begun as M86 and M87. Still good for 30 kts. if pressed. (Continued on next page).

DESTROYERS.

Destroyers—FRANCE

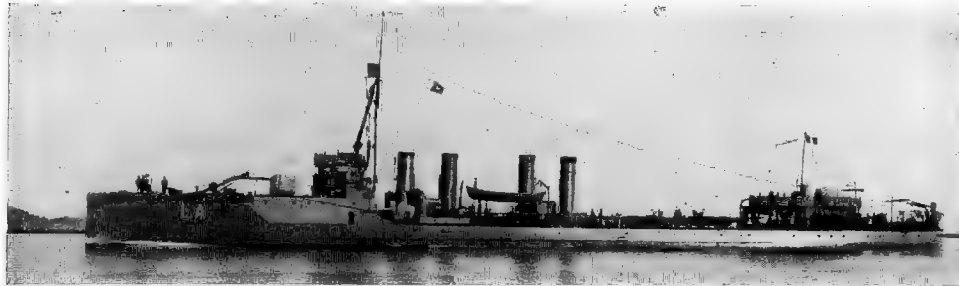
7 Bory Type.—continued.

(1911 Programme Boats).



1924 Photo, M. Bar.

1 Rochefort Dockyard: **Protet** (1913). 800 tons. Dimensions: 272.4 × 26 × 10 feet. Laval turbines. 2 du Temple-Guyot boilers. Designed H.P. 15,000 = 31 kts. Fuel: 140 tons oil. Practically sister-boat to *C. Lucas* and *Bisson*. Begun as *M83*.



Note strutted foremast.

1921 Photo, M. Bar, Toulon.

1 Toulon Dockyard: **Commandant Lucas** (1914). 800 tons. Dimensions: 272.4 × 26 × 10 feet. Laval Turbines. du Temple-Guyot boilers. Designed S.H.P. 16,000 = 31 kts. Fuel: 140 tons oil. Practically sister-boat to *Protet* and *Bisson*. Begun as *M78*. Recently equipped for minesweeping.

7 Bory Type.—continued.

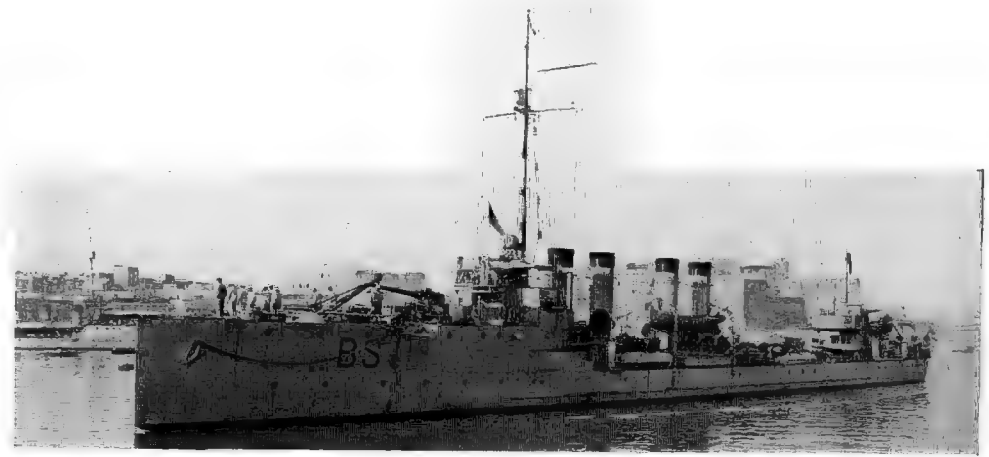
(1911 Programme Boats).



1919 Photo, Dussau, Toulon.

1 Schneider & Cie (Creusot): **Mangini** (1913). 800 tons. Dimensions: 253½ × 25.7 × 10 feet. Designed H.P. 16,000 = 30 kts. Zoelly turbines. Du Temple-Guyot boilers. Fuel: 160 tons oil. Begun as *M 80*.

(1910 Programme Boats).



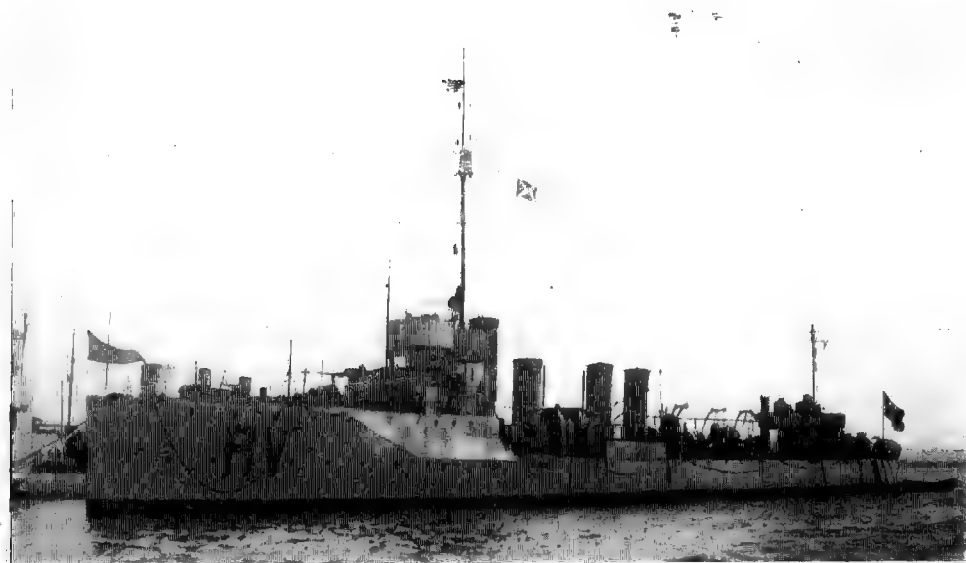
1919 Photo, Comm. B. D. Holberton, R.N.

1 Toulon D. Y.: **Bisson** (1912). 800 tons. Dimensions: 272.4 × 26 × 10 feet. Laval turbines. 2 du Temple-Guyot boilers. Designed S.H.P. 15,000 = 31 kts. Fuel: 140 tons oil. Practically sister-boat to *C. Lucas* and *Protet*. Can still touch 27 kts.

(Continued on next page.)

7 Bory Type—continued.

(1910 Programme Boat.)



COMMANDANT RIVIERE. (Fore funnel raised).

1922 Photo, H. Freund.

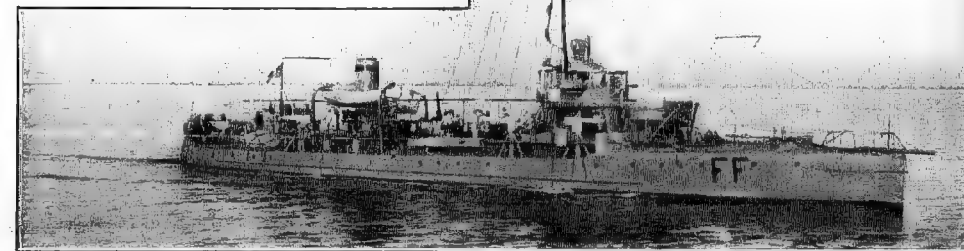
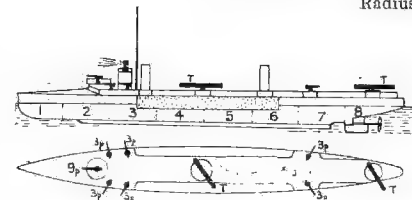
1 *Soc de la Gironde* (Bordeaux). **Commandant Rivière** (1912). 800 tons. Dimensions: 256½ × 25½ × 10 feet. Breguet turbines, Du Temple-Guyot boilers. Designed S.H.P. 14,500 = 31 kts. Trials: 15,760 = 32.3 kts. Fuel: 140 tons oil. Has recently been fitted for minesweeping. Armed with 2—3.9 inch, 4—9 pdr, 1—14 pdr. A.A. guns, 4—18 inch torpedo tubes, in pairs

2 Boats of Older Types (built 1898-1911).

Commonly known as "Flying Deck Type" (*Type Pont à Caillebotis*).

Armed with 1—9 pdr., 4—3 pdr. and 2 tubes, and complement, 71.

Radius of action, 950 miles at 15 kts.



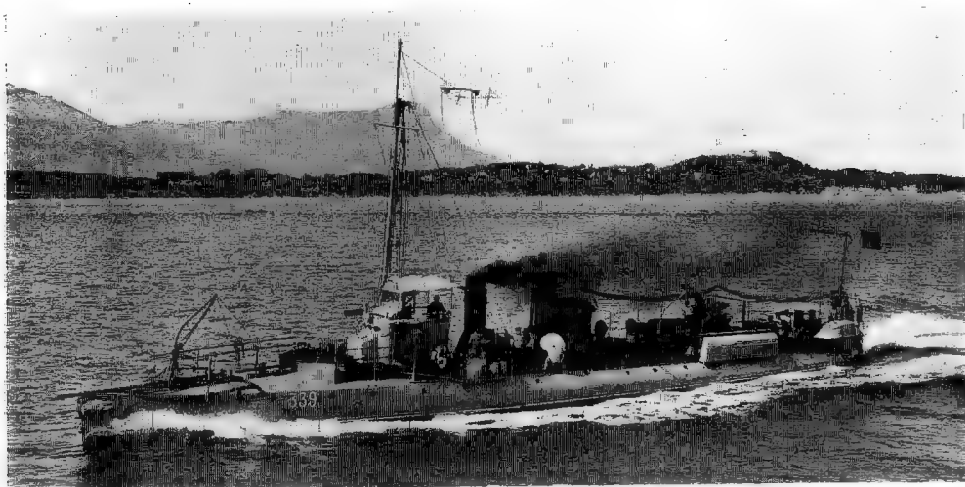
Photo, Bissonier

2 *Trident* class: **Glaive**, **Trident** (Rochefort D.Y., 1905-8). 340 to 415 tons. Dimensions: 196.8 × 21.7 × 11.5 feet. Designed H.P. 6400; all made 28 to 30.4 kts. on trials. Boilers: Du Temple-Guyot or Normand. Coal: 80 tons.

Note.—*Glaive* is Training Ship for Engineer Cadets; *Trident*, Stokers' Training Vessel.

4 "Torpilleurs Numerotés."

Totals.	Numbers.	First Begun	Last Completed	Displacement tons	I.H.P.	Max. Speed kts	Coal tons	Complement	Tubes	Max. Draught
4	337—315	'03	'07	100	2000	20	11	23	3—1	8 $\frac{3}{4}$



1920 Photo, Bar, Toulon.

Four of these boats left in service, 1923; numbers as follows: **315, 321, 327, 337.**

All boats are *Normand* types. Several exceeded 27 kts. on original trials, but few can exceed 25 kts. now

All originally armed with 2—1 pdr. guns and 2 or 3—15 inch tubes, but these have been removed from some boats, being replaced by a 14 pdr. or 9 pdr. gun, or by 2—3 pdrs. as in illustration above.

No. 321 disarmed. Remainder will probably be condemned shortly.

Coastal Motor Boats.

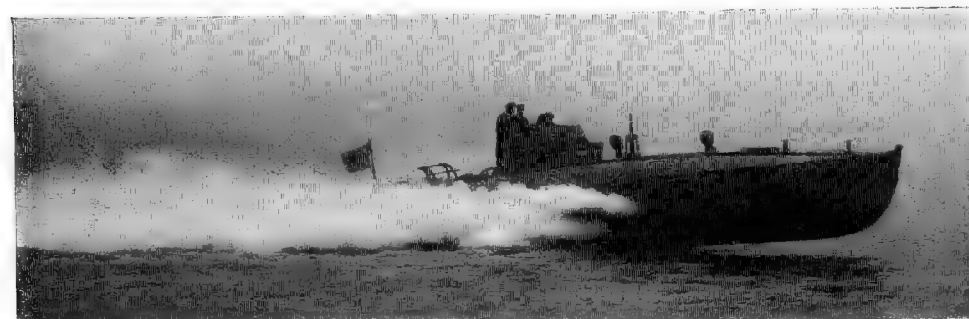
(Vedettes rapides.)

Completed 1928.

Photo wanted.

3 VTA type: 42 feet long, with single motor of Lorraine-Dietrich type, 500 H.P. = 37 kts. Armed with 1 M.G. and 1—18 inch torpedo. Built by Chantiers Jeannin, Excelior and Wisner, respectively. With 250 H.P. a speed of 30 kts. can be maintained.

6 VTB type: Larger than above, with 2 motors. H.P. 1000 = 45 kts. 2 torpedoes carried. 3 built by Wisner, 3 by Ch. de la Loire.



55 foot type.

Photo, by courtesy of Messrs Thornycroft. (Builders).

1—55 foot type (1921). Dimensions: 55 (p.p.) \times 11 \times 3 $\frac{1}{2}$ feet. Two Thornycroft Y12 type motors, each 350 B.H.P. = 38/41 kts. Petrol carried: 350 gallons. Endurance: 300 miles. Armament: 2 Lewis guns, 2 D.C., 2—18 inch torpedoes. Complement, 5.

1—45 foot type (1921). Dimensions: 45 (p.p.) \times 9 $\frac{1}{2}$ \times 3 feet. One Thornycroft Y12 type motor of 350 B.H.P. = 37 kts. Petrol carried: 150 gallons. Endurance: 250 miles. Armament: 1 Lewis gun, 1—18 inch torpedo. Complement, 3.

Submarine Chasers (Chasseurs de Sousmarins).

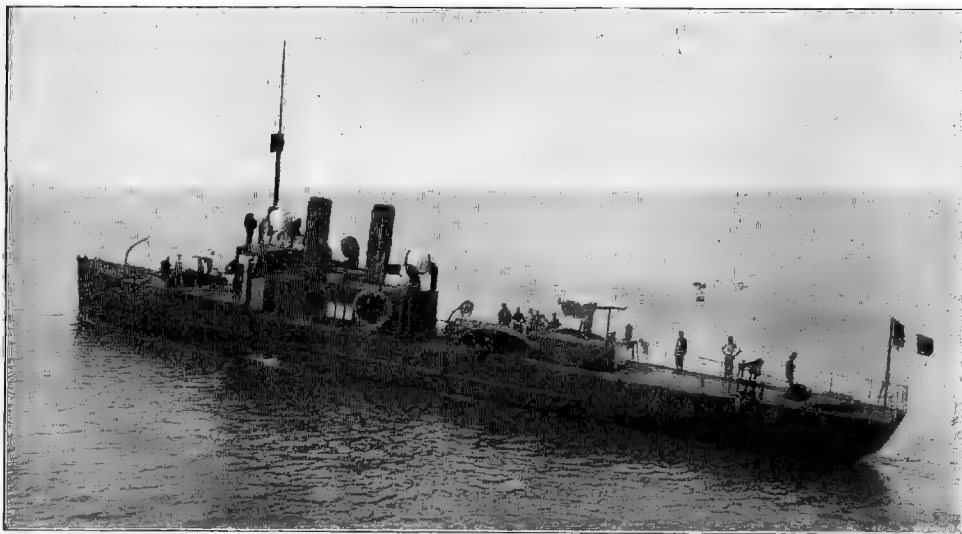


Photo added 1927, by courtesy of M. Normand.

15 Normand type boats: **C102—C106** (Normand, Le Havre, 1918-21). **C107—C116** (respective builders unknown).^{*} 133 tons. Dimensions: 136½ (p.p.), 142 (o.a.) × 17½ × 4½ feet (draught amidships), 7½ feet (draught below rudder support). Guns: 2—75 mm., 2 M.G. Designed I.H.P. 1300 = 16.5 kts. Triple expansion engines. 2 Normand boilers. Coal: 24 tons, except in *C 107, 110, 111, 113-115* all 28 tons. Complement, 32. Contract for 2 other boats with Normand cancelled 1918. *C 101* swamped and sunk off Spanish Coast, December, 1920.

^{*}Built by Chantiers de la Loire, Nantes, Chantiers Dubigeon, Nantes, and Chantiers Normand, Le Havre.

Note.—*C 111* and *C 112* have been given respective names of *Avalanche* and *Capitaine Bourdais* while serving in Indo-China.



C60.

1920 Photo, H. Freund, Brest.

37—100 foot type: Numbered between **C25**, and **C98**. Built by U.S. Navy Yards and smaller shipbuilding firms, 1917-18, for U.S. Navy as *SC5—SC404*, but contracts transferred to French Government. Designed displacement, 54 tons; actual displacement, 77 tons. Dimensions: 105 ft. (p.p.), 110 ft. (o.a.) × 14 ft. 8½ in. × 5 ft. 5½ in. (mean hull draught). Machinery: 3 sets of 220 B.H.P. Standard petrol motors, totalling 660 B.H.P.=17 kts. Petrol: 2400 gallons=900 miles at 10 kts. Armament: 1—75 m/m (14 pdr.) field gun converted to naval mounting, but many have no guns now, and some have one of smaller calibre. Carry depth charges. Complement, 26.

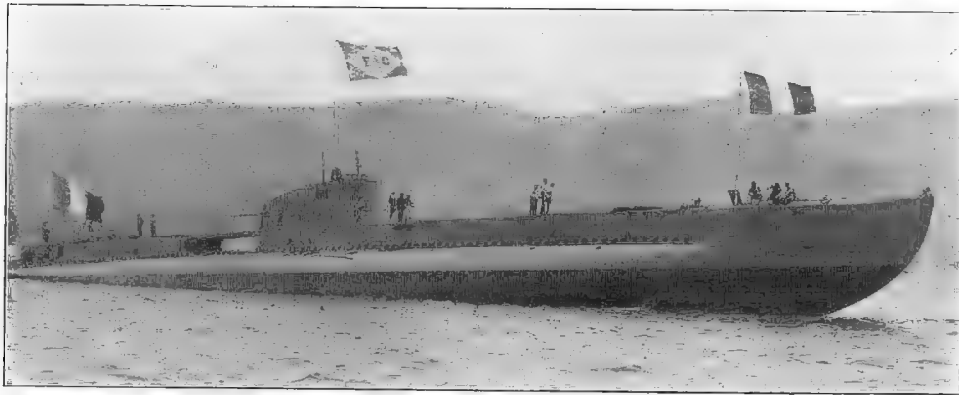
No. in Class.	Class, Type (Design).*	Date.	Displacement.	H.P.†	Speed†	Endurance.	Tubes or Gear.	Complement.
			Surface Submerged	Surface Submerged	Surface Submerged	Surface Submerged		
First Class:			tons		kts.			
1	<i>Surconf</i>	'27—?	3250	?	18 10	?	?	?
5	<i>Saphir</i> class (NF)	'26—?	780 925	1300 ?	12 9	?	4/32‡	?
25	<i>Redoutable</i> class (FR).....	'24—?	1550 2000	5000 2600	18 10	8000 miles at 10 kts. 100 miles at 5 kts.	10	60
9	<i>Requin</i> class (FR)	'22—'27	1130 1410	2900 1800	16 10	7000 miles at 9 kts. 105 miles at 5 kts.	10	48
1	<i>M. Callot</i> (SL)	'17—'21	932 1298	2900 1640	16.5 10.5	2800 miles at 11 kts. 118 miles at 5 kts.	6/27‡	44
1	<i>P. Chailley</i> (NF)	'17—'23	886 1181	1800 1200	14 9	2800 miles at 13.7 kts. 80 miles at 9 kts.	4/48‡	44
2	<i>Pierre Marrast</i> class§	'17—'18	821 1011	2400 1160	16.2 8.5	6500 miles at 8 kts. 95 miles at 3 kts.	6	39
1	<i>Halbroun</i> §	'16—'17	1930 3050	3300 1780	15.8 7.7	12630 miles at 8 kts. 53 miles at 4 kts.	6	82
1	<i>René Audry</i> §	'17—'18	1300 1800	2400 1200	13.4 7.5	9000 miles at 7 kts. 55 miles at 4 kts.	4/38‡	47
2	<i>Léon Mignot</i> class§	'16—'17	865 1053	2400 1160	16.5 8.5	9250 miles at 8 kts. 50 miles at 6 kts.	6	36
2	<i>Joessel</i> class (S)	'14—'20	915—959 1200—3	2900 1650	16.5 11	1200 miles at 10 kts. 115 miles at 5 kts.	8	47
4	<i>Lagrange</i> class (II)	'14—'24	840 1317	2600 1650	16.5 11	4200 miles at 10 kts. 115 miles at 5 kts.	8	47
2	<i>Dupuy de Lôme</i> class (H)	'15—'16	554 1291	2900 1600	16 11	1450 miles at 11 kts. 115 miles at 5 kts.	8	43
2	<i>Néréide</i> (S)	'13—'16	837 1098	2400 1510	16.8 10.5	3500 miles at 12 kts. 110 miles at 5 kts.	8	42
	<i>Gustave Zédé</i> (S)	'12—'14	849 1098	2400 1510	16 10.5	2300 miles at 10 kts. 110 miles at 5 kts.		
Second Class.								
12	<i>Diane</i> class (NF)	'27—?	630 800	1440 1100	14 9	3000 miles at 10 kts. 78 miles at 5 kts.	7	39
11	<i>Ondine</i> class (various)	'21—'27	600 765	1300 1000	14 9.5	3500 miles at 10 kts. 90 miles at 5 kts.	7	39
2	<i>Fournier</i> class (SL)	'17—'20	342 513	1000 460	14 8.5	1070 miles at 12 kts. 63 miles at 5 kts.	4	24
3	<i>Carissan</i> class§	'17—'18	516—555 651—677	1100 760	14 8	7000 miles at 8 kts. 45 miles at 4.5 kts.	5	34
1	<i>Victor Réveille</i> §	'15—'16	755 980	1100 600	10.5 7.5	8000 miles at 7 kts. 75 miles at 3 kts.	2/38‡	38
2	<i>Armide</i> class (S)	'14—'16	460 665	2200 850	17.5 11	2600 miles at 11 kts. 150 miles at 5 kts.	4	27
1	<i>Daphné</i> (S)	'14—'16	720 950	1800 1400	15.3 11	2800 miles at 14 kts. 100 miles at 5 kts.	10	35
3	<i>Bellone</i> class (H)	'14—'18	530 790	1500 800	15.8 9	1300 miles at 12 kts. 115 miles at 5 kts.	8	29

^{*} (FR) = Fuzier-Roquebert. (H) = Hutter (I) = Laubeuf. (NF) = Normand-Fenaux. (S) = Simonot. (SL) = Schneider-Laubeuf.

† As designed; not attained in some cases. ‡ Figures in Italics = Mines. § Ex-German boats, taken over 1920.

1 Cruiser Type.

SURCOUF. 3250 tons *surface* displacement and about $1\frac{1}{2}$ knots speed, with an armoured deck. Laid down as Q 5 at Cherbourg, Dec., 1927, under 1926 Programme. No further information available.

25 Redoutable Class.

FRESNEL.

1929 Photo, M. Bar, Toulon.

25 *Fuzier-Roquebert* type: **Redoutable** (Feb. 24th, 1928), **Vengeur** (Sept., 1928), (both laid down at Cherbourg, July, 1925), **Pascal, Pasteur** (both July 19th, 1928—laid down at Brest, Oct., 1926), **Henri Poincaré**, (April 10th, 1929), **Poncelet** (April 10th, 1929), (both laid down at Lorient, Feb. 1927), **Fresnel** (June 8th, 1929, At. & Ch. de St. Nazaire, Penhoët), **ARCHIMEDE** (building by Ch. Navals Français, Blainville), **Monge**, (June 25th, 1929, F. & Ch. de la Méditerranée, La Seyne), all authorised by 1924 and 1925 Programmes; **Actéon**, (April 10th, 1929), **Achéron** (Aug. 6th, 1929, by At. & Ch. de la Loire, Aug. 1927); **Argo** (April 11th, 1929, by Ch. Dubigeon, Nantes); **ACHILLE, AJAX** (at Brest); these 5 as Q 147—151, under 1926 Programme; **Prométhée** (Cherbourg), **Persee** (Ch. Navals Français), **Protée** (F. & Ch. de la Méditerranée), **Pégase** (At. & Ch. de la Loire), **Phénix** (Ch. Dubigeon)—all 5 under 1927 Programme. Q 167 and Q 168 (Cherbourg), Q 169 and Q 170 (Brest), Q 171 and Q 172 (not yet assigned)—all 6 under 1928 Programme. *Surface* displacement: 1550 tons (first six), 1570 tons (others). *Submerged* displacement: 2000 tons. Dimensions: $302\frac{1}{2} \times 30\frac{1}{2} \times 15\frac{1}{2}$ feet. Machinery: 2 sets Sulzer Diesels of 5000 combined H.P.=18 kts. *surface* speed (19.5 kts. was reached on trials). Electric motors of 2000 H.P.=10 kts. *submerged*. Armament: 1—3.9 inch A.A., 1—37 m/m. A.A., 1 M.G., 10—21.7 inch tubes, including 2 sets of revolving triples—1 bow and 1 stern. (Reported that in 11 later boats, 1—5.5 inch will be mounted in place of 1—3.9 inch.) Comp., 65. Other characteristics similar to those of *Requin* class, following.

5 Saphir Class. (Minelayers.)

4 *Normand-Fenoux* type: **Saphir** (Dec. 20th, 1928), **Turquoise** (May 16th, 1929, both laid down at Toulon, 1926), **NAUTILUS** laid down at Brest, 1927, **Rubis** (laid down at Toulon, 1928), **Q 173** (laid down at Toulon, 1929). Displacement: 780 tons *on surface*, 925 tons *submerged*. Dimensions: $216\frac{1}{2} \times 23\frac{1}{2} \times 13\frac{1}{2}$ feet. Machinery: 2 sets Vickers-Normand 4-cycle Diesels. B.H.P. 1300—12 kts. *Submerged* speed, 9 kts. Armament: 1—3 inch A.A., 4—21.7 inch tubes, 32 minelaying chutes, arranged on Normand-Fenoux system. Carry 6 torpedoes and 32 mines of 460 lbs. weight. First two authorised under 1925 Programme, third under 1926, fourth 1927, fifth 1928-29.

9 Requin class.

MARSOUIN.

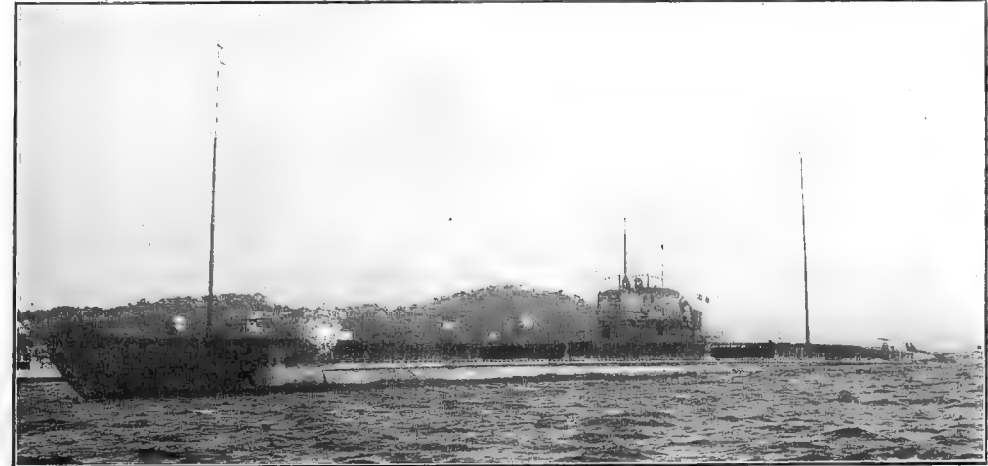
1926 Photo.

9 *Fuzier-Roquebert* type: **Requin** (19th July, 1924), **Morse** (18th Nov., 1925), **Narval** (9th May, 1925), **Souffleur** (Sept., 1924), **Caiman** (3rd March, 1927), (all Cherbourg), **Dauphin** (1925), **Espadon** (26th May, 1926), (both Toulon), **Marsouin** (Jan., 1925), **Phoque** (16th March, 1926), (both Brest). 1130 tons (*on surface*), 1410 tons (*submerged*). Dimensions: $256\frac{1}{2} (p.p.) \times 21\frac{1}{2} \times 15$ feet. Complement, 51. Machinery: 2 Diesel motors, of Sulzer or Schneider-Carel type, each 1450 H.P. Total 2900 H.P.=16 kts. Electric drive: 248 "D" type batteries, 1800 H.P.=10 kts. Radius: 7000 miles at 9 kts. (*on surface*), 105 miles at 5 kts. (*submerged*). Endurance: equal to

(Continued in next column.)

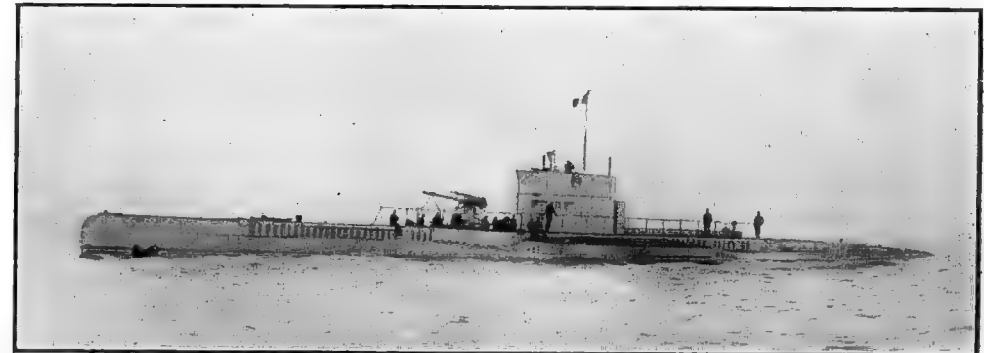
9 Requin class—continued.

30 days' cruising. Guns: 1—3.9 inch, 2 M.G. A.A. Torpedo tubes: 10—21.7 inch (4 bow and 2 stern *submerged*; 4 above water, revolving in pairs before and abaft C.T. 32 torpedoes (24 of 1922 model, 8 of 1919 model) carried by *Caiman, Espadon, Phoque*; 16 by others.
Notes.—*Requin, Souffleur, Morse, Narval, Marsouin, Dauphin* begun as Q 115—120 of 1922-1923 Programme. Other three came under Coast Defence Vote of June 30, 1923. All completed 1926-27. Freeboard about 7 feet. Top of C.T. is 13 feet above water. Can dive with safety to 100 metres (say, 55 fathoms). On commissioning, *Requin* carried out a 5,000 mile cruise, occupying 31 days, in African waters, without mishap of any kind.



DAUPHIN.

1926 Photo, M. Bar, Toulon.

1 Special Boat (Mine-laying—Diesel.)

PIERRE CHAILLEY.

1925 Photo, by courtesy of Messrs. Normand.

1 *Normand-Fenoux* type: **Pierre Chailley** (Ch. A. Normand Le Havre, 19th Dec., 1922). Displacements: 886 tons *on surface*, 1181 tons *submerged*. Dimensions: $229\frac{1}{2} \times 26\frac{1}{2} \times 13$ feet. Guns: 1—3.9 inch. Torpedo tubes: 2—18 inch bow and 2—18 inch immediately abaft C.T. in twin mounting on a revolving platform. (The latter pair are normally hidden by a cover which matches the deck.) Mines carried: 64 Sautter-Harley of 440 lbs. each (maximum stowage) in 32 chutes or cells—disposed 16 on each beam, 2 mines in each, about centre of boat, between inner and outer hulls. Laying rate has been stated to be 40 mines in 4 minutes, which at 6 kts. = 15 to 30 metres spacing between planted mines. Machinery: 2 sets of 900 H.P. 2-cycle 6-cylinder Sulzer-Diesel motors, totalling 1800 B.H.P. for a *max. surface* speed of 14 kts. When *submerged*, electric motors + batteries of 1200 H.P.=9 kts. Oil fuel: 60 tons (sufficient for 20 days' cruising). Endurances: 2800 miles *on surface*, at 10 kts., 80 miles *submerged* at 9 kts. Built under 1917 Programme.

Note.—Actual number of mines normally carried in service is understood to be 40.

1 Special Boat (Mine-laying—Diesel.)



1921 Photo, M. Bar, Toulon.

1 *Schneider-Laubeuf* type: **Maurice Callot** (Ch. de la Gironde, Bordeaux; launched March 26th, 1921). Displacements: 932 tons *on surface*; 1298 tons *submerged*. Dimensions: 247½ × 22 × 12½ feet. Guns: 1—14 pdr. on A.A. mount. Torpedo tubes: 4—18 inch bow and 2—18 inch midway between C.T. and stern. 8 torpedoes carried. Mines carried: 27—200 kg., in "wet" stowage on 3 horizontal belt conveyors (9 mines to each row) abaft C.T., above pressure hull and below superstructure deck. Laying rate believed to be one mine from each row at 12 seconds' intervals, which at 5 kts = 30 metres spacing between planted mines.

Machinery: For *surface* running, 2 sets of 8 cyl. 2 cycle *Schneider-Carel's* Diesel motors (16.1" bore × 17.7" stroke), each engine developing about 1450 B.H.P. at 330 r.p.m. Total B.H.P. 2900 = 16.5 kts. speed *on surface*. These are the same type of motors as those mounted in *Fulton* and *Joessel*, which have proved remarkably reliable after an extended series of trials. Electric motors + batteries of 1640 H.P. = 10.5 kts. *submerged*.

Endurance: 44.87 tons oil fuel carried, giving following endurance *on surface*: (a) 1980 miles at 13 kts. with both motors running; (b) 2800 miles at 11 kts. with one engine running. When *submerged*, 118 miles at 5 kts.

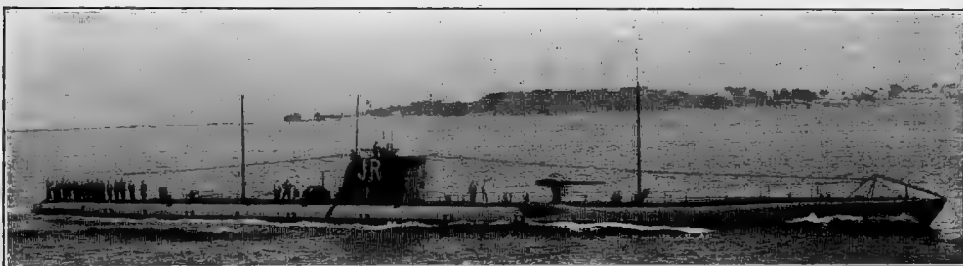
Complement: 4 officers + 40 men. Double-hull design built on *Laubeuf* principle. Begun under 1917 Programme; began acceptance trials, August, 1921. On a 50 day cruise is said to have maintained average speeds of 16½ kts.

2 Pierre Marrast Class (ex-German).



P. MARRAST.

1924 Photo, M. Bar, Toulon.



J. ROULIER.

1924 Photo, M. Bar, Toulon.

2 *ex-German* "Mittel-U" type: **Pierre Marrast** (ex-German *U 162*), **Jean Roulier** (ex-German *U 166*), both built by Bremer-Vulkan, Vegesack, and completed 1918. Displacements: 821 tons *surface*; 1011 tons *submerged*. Dimensions: 235 × 21 ft. 1 in. × 12 ft. 9 in. Machinery: 2 sets 6-cylinder 2 cycle, M.A.N. Diesel, B.H.P. 2400 = 16.2 kts. *on surface*. *Submerged* speed: 8.5 kts. Oil fuel: 47/109 tons. Endurance: 6500 miles at 8 kts. *on surface*; about 90-100 miles at 3 kts. *submerged*. Guns: 1—4.1 inch. Torpedo tubes: 6—19.7 inch (4 bow, 2 stern). Stowage for 12 torpedoes. Complement, 42.

Notes.—Units of German *U 160—172* class and among last submarines completed for the German Navy. Double-hull design. Appearance almost identical with *L. Mignot* type.

1 ex-German Boat.



Photo added 1923.

1 *ex-German* "U.K.-Holder" type: **Halbronn** (ex-German *U 139* (*Schweiger*), built by Krupp-Germania, Kiel; completed 1917). Displacement: 1930 tons *on surface*, 3050 tons *submerged*. Dimensions: 302½ × 29½ × 15½ feet. Machinery: 2 sets Krupp or M.A.N. 6 cylinder 4 cycle Diesel engines. B.H.P. 3300 = 15.8 kts. *on surface*. Also 1—550 H.P. auxiliary engine, used for charging batteries which could be used for running at low cruising speeds through main motors. Speed *submerged*: 7.7 kts. Oil fuel: 104/295 tons. Endurance: 12,630 miles at 8 kts. *on surface*. Guns: 1—3.9 inch. Torpedo tubes: 6—19.7 inch (4 bow, 2 stern). Stowage for 19 torpedoes. Complement, 51.

Notes.—Unit of German *U 139—141* class. Double-hull type, fitted with anti-rolling tanks. Found deficient in stability by Germans; *U 141* of the same class had wood filling along upper deck to increase stability. This "Cruiser" design was a very qualified success.

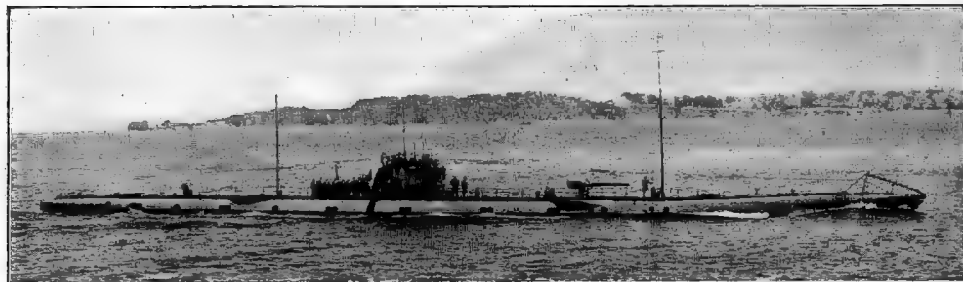
1 ex-German Boat (Mine-laying—Diesel.)



1920 Copyright photo, M. Bar, Toulon.

1 *ex-German* "UE II" type: **Rene Audry** (ex-German *U 119*, built by Vulkan, Hamburg, completed 1918). Displacements: 1300 tons *on surface*, 1800 tons *submerged*. Dimensions: 267 ft. 5 in. × 24 × 13 ft. 10 in. Periscope depth: about 45 feet. Machinery: 2 sets of 6 cyl. 4 cycle M.A.N. Diesel engines *on surface*, B.H.P. 2400 = 13.4 kts. *Submerged* speed: 7.5 kts.* Endurance: 9000 miles at 7 kts. *on surface*. Oil capacity: 93.5/194 tons. Guns: 1—5.9 inch (Krupp). Torpedo tubes: 4—19.7 inch (bow). 18 torpedoes carried; 10 in pressure-tight cylinders alongside upper deck, rest within hull. 2 horizontal mine-laying chutes and ports under stern. Stowage for 42 mines., but only 38 can be carried with safety. Originally unit of German *U 117—126* class, designed for mine-laying off U.S. coast. Were double-hull boats. Complement, 40.

*A sister boat, *U 117*, delivered to U.S. Navy, had a *max. surface* speed of 14.7 kts.; *max. speed submerged*, 7.2 kts.

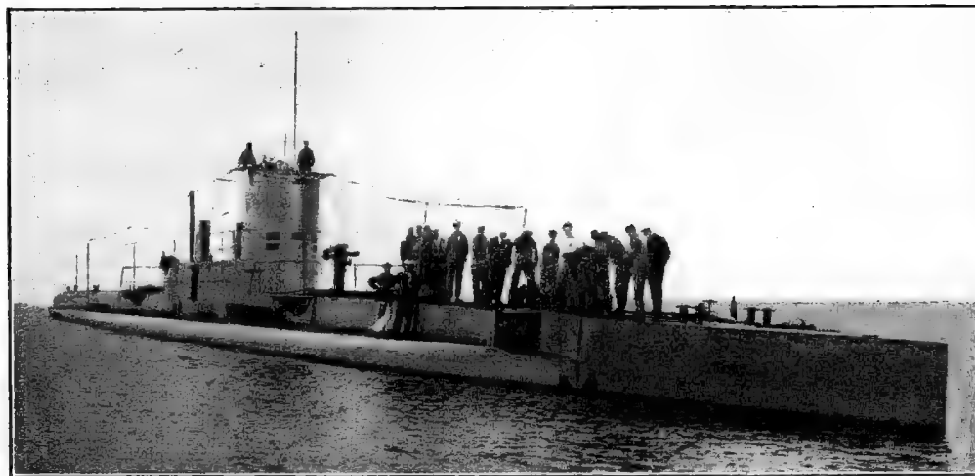
2 Léon Mignot Class (ex-German).

J. AUTRIC.

1924 Photo, M. Bar, Toulon.

2 ex-German "Mittel-U" type: **Jean Autric** (ex-German U 105), **Léon Mignot** (ex-German U 109). Both built by Krupp-Germania, Kiel, and completed 1917. Displacements: 865 tons *on surface*, 1053 tons *submerged*. Dimensions: *about* 235 × 20½ × 12½ feet. Periscope depth: 45 feet. Machinery: 2 sets 6 cylinder 4 cycle M.A.N. Type Diesel engines. B.H.P. 2400 = 16.5 kts. *on surface*. Speed *submerged*: 8.5 kts. Oil: 82 tons. Endurance: 9280 miles at 8 kts. *on surface*; 50 miles at 6 kts. *submerged*. Guns: 1—4.1 inch. Tubes: 6—19.7 inch (4 bow, 2 stern). Stowage for 13 torpedoes. Complement, 40.

Notes.—Units of the German U 105—114 class. Are double-hull type.

2 Joessel Class.

FULTON.

1928 Photo.

2 *Simontot* type: **Fulton** (1919) and **Joessel** (1917). Both built at Cherbourg D.Y. Displacements: *Fulton*, 915/1203 tons. *Joessel*, 959/1200 tons. Dimensions: 242.8 × for *Fulton* 19.7 × 13.8 feet; for *Joessel* × 23.4 × 14.5 feet. Machinery: *on surface*, 2 sets of 8 cylinder 2 cycle Schneider-Carelès Diesel engines (16.1" bore × 17.7" stroke) developing *about* 1450 B.H.P. at 330 r.p.m. Total power: 2900 B.H.P. = 16½ kts. *Submerged speed*: 11 kts. Oil fuel: 125,000 litres. Endurance: *on surface* and *submerged* about the same as *Lagrange* class in next column. Armament: 2—14 pdr. guns on A.A. mounts and 8—18 inch tubes (4 *submerged* in bow; 2 fixed divergent on deck forward; 2 revolving on deck aft). Stowage for 10 torpedoes. Complement, 47.

Notes.—*Joessel* reported to have made over 18 kts. *on trials*. Reports on their performance during long cruises indicate that they are very reliable and successful boats.

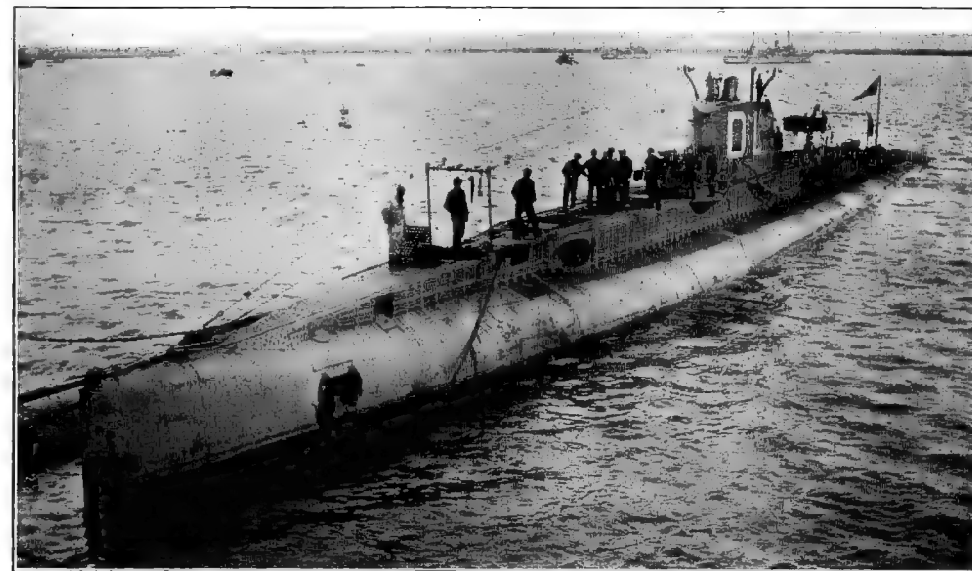
4 Lagrange Class.

ROMAZZOTTI.

1924 Photo, M. Bar, Toulon.

4 *Hutter* type: **Lagrange** (1917), **Regnault** (25th June, 1924), and **Romazzotti** (1917). All built at Toulon D.Y. **Laplace** (Rochefort D.Y., 1919). Displacements: 840 tons *on surface*, 1317 tons *submerged*. Dimensions: 246½ × 20.9 × 13.2 feet. Machinery: *on surface*, 2 sets 1300 B.H.P. Sulzer-Diesel engines, totalling 2600 B.H.P. for 16½ kts. *Submerged speed*: 11 kts. Endurance: *on surface*, 2500 miles at 14 kts., 4200 miles at 10 kts., 6000 miles at 8 kts. When *submerged*, 115 miles at 5 kts. Armament: 2—14 pdr. guns. 8—17.7 inch torpedo discharges, arranged as in *Dupuy de Lôme*, below. Stowage for 10 torpedoes and 440 rounds of ammunition for guns. Complement, 47.

Notes.—Begun as Q 111—114 of 1914 Programme. General design as *D. de Lôme* class.

2 Dupuy de Lôme Class.

DUPUY DE LÔME.

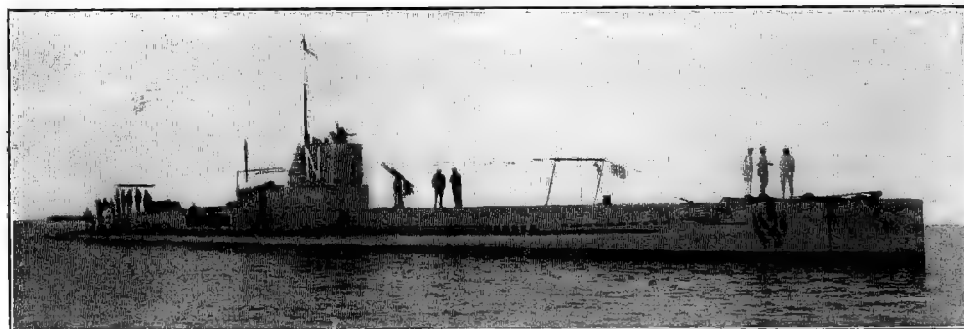
1927 Photo, H. Freund, Brest.

2 *Hutter* type: **Dupuy de Lôme** (1915) and **Sane** (1916). Both built at Toulon D.Y. Displacements: 854 tons *on surface*, 1291 tons *submerged*. Dimensions: 246 × 20.9 × 13.7 feet. Machinery: *on surface*, Diesel engines (recently renewed) of 2900 H.P. = 16 kts. *Submerged speed*: 10 kts. Armament: 2—14 pdr. guns and discharge positions for 8—18 inch torpedoes as follows: 2 *submerged* tubes, W.T. parallel, built into bows; 2 *above water*, fixed, divergent, built into superstructure forward; 2 revolving, in twin mount, under superstructure abaft C.T.; 2 fixed, divergent, built into superstructure aft. Oil: 100 tons. Complement 43.

Notes.—Begun as Q 105 and Q 106 of 1913 Programme. Both completed 1916. Are enlargements of M. Hutter's design for the *Bellone* class. *Dupuy de Lôme's* 2 Diesels are by Krupp *Sane* has two Koerting motors.

First Class—continued.

2 Gustave Zédé Class.



NÉRÉIDE

Photo added 1928.

1 Simonot type: **Néréide** (Cherbourg D.Y., 1914). Surface displacement 837 tons, draught 12.4 feet submerged; guns, 1—14 pdr; displacement, other dimensions, tubes and complement, as *Gustave Zédé* (below). Machinery: 2 sets 2 cycle 8 cyl. 1200 B.H.P. Schneider-Carel's Diesel engines, 2400 H.P. = 16.8 kts. on surface. Electric motors + batteries 1540 H.P. = 10.5 kts. submerged. Radius of action: about 3500 miles at 12 kts. on surface, 110 miles at 5 kts. submerged. Oil: 100 tons.

Notes.—Ordered January, 1911, as Q 93 of 1911 Programme. Completed, end of 1916.

1 Simonot type: **Gustave Zédé** (Cherbourg D.Y., 1913). Displacements: 849 tons on surface, 1098 tons submerged. Dimensions: 242½ × 19½ × 13½ feet. Machinery: Diesels (2 sets M.A.N.) of 2400 total B.H.P. = 16 kts. Electric motors + batteries, 1540 H.P. = 10.5 kts. submerged. Radius of action: 2300 miles at 10 kts. and 1800 miles at 14 kts. on surface. Armament: 2—14 pdr. Torpedo tubes: 2—18 inch tubes + 6—17.7 inch torpedoes carried in external frames. Complement, 42.

Notes.—Begun as Q 92 of 1911 Programme. Completed October, 1914. Sank 1916, after accumulator explosion, but was salvaged and repaired.

Second Class.

12 Diane Class.

(Improved Ariane type.)



ARGONAUTE.

1929 Photo.

All are of Normand-Fenau type, with minor differences, according to builders:—

4 Normand boats: **Diane** (April, 1929), **Meduse** (April, 1929), **Amphitrite**, **Orphée**

3 Schneider-Creusot boats: **Argonaute**, (May 23, 1929), **Arethuse** (August 8th, 1929), **Antiope**.

3 Worms (Ch. de la Seine Maritime) boats: **Amazone**, **Atalante**, **Oreade**.

1 Ch. de la Loire boat: **Orion**.

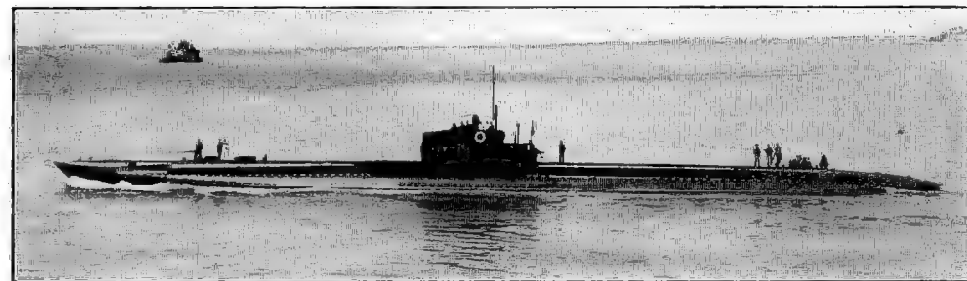
1 Ch. Dubigeon boat: **Ondine**.

(Continued on next column.)

Laid down 1927-29, under 1926, 1927 and 1928 Coast Defence Votes. Displacement $\frac{635}{809}$ tons. Dimensions: 219½ × 18 × 14 feet. Armament: 1—3 inch AA., 1 M.G., 8—21.7 inch tubes. Diesel engines as undernoted. B.H.P. $\frac{1440}{1100} = \frac{14}{9}$ kts. Radius of action: $\frac{3000 \text{ miles at 10 kts.}}{78 \text{ miles at 5 kts.}}$

Note.—*Diane*, *Meduse*, *Amphitrite*, *Amazone*, *Atalante*, Q 163, Q 164, have each 2 sets 4-cycle Vickers-Normand type Diesels; *Arethuse*, *Argonaute*, *Antiope*, each 2 sets 2-cycle Schneider-Carel's type; and Q 165, Q 166, each 2 sets 2-cycle Sulzer type.

11 Ariane Class.

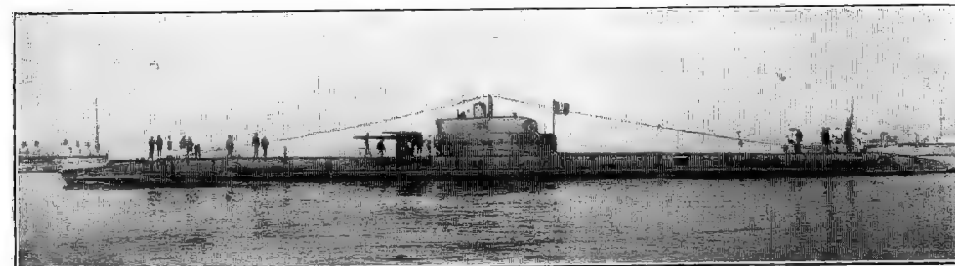


ARIANE.

1927 Official Photo.

3 Normand-Fenau type, built by C. & A. Augustin Normand, Le Havre: **Ariane** (August 6, 1925), **Danacé** (Sept 11, 1927), **Eurydice** (May 31, 1927). Displacement: 600 tons surface, 765 tons submerged. Dimensions: 216½ (p.p.) × 16 × 11½ feet. Machinery: 2 sets 4-cycle Diesels, Vickers-Normand type. Electric motors by Schneider et Cie. 1,200 B.H.P. on surface, 1,000 submerged.

Note.—This type is reported to have given great satisfaction in service. A fourth boat, *Ondine*, lost by collision with a Greek Steamer, October 3rd, 1928.

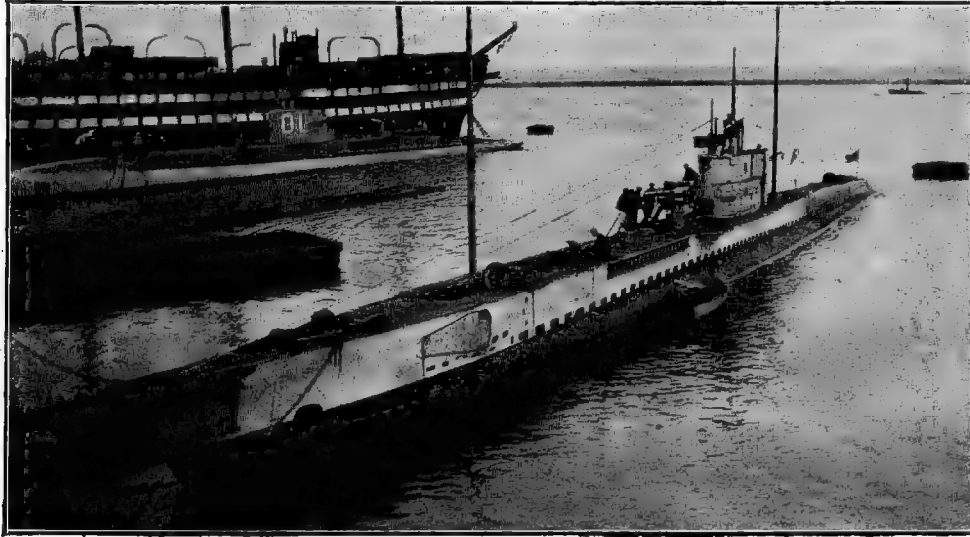


DORIS.

1929 Photo, M. Bar, Toulon.

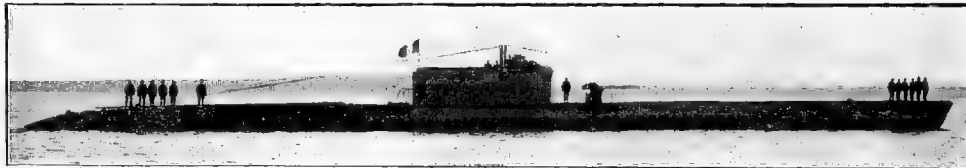
1 Schneider-Laubeuf type, building by Schneider et Cie, Chalon-sur-Saône: **Circe** (Oct. 29, 1925), **Calypso** (Jan., 1926), **Doris** (Nov. 25, 1927), **Thetis** (June 30, 1927). Displacement: 580 tons surface, 764 tons submerged. Dimensions: 204½ (p.p.) × 17½ × 11 feet. Machinery: 2 sets 2-cycle Schneider-Carel's Diesels, 1,250 B.H.P. on surface, 1,000 submerged.

Ariane Class—continued.



SIRÈNE.

1926 Photo, H. Freund, Brest.



SIRÈNE.

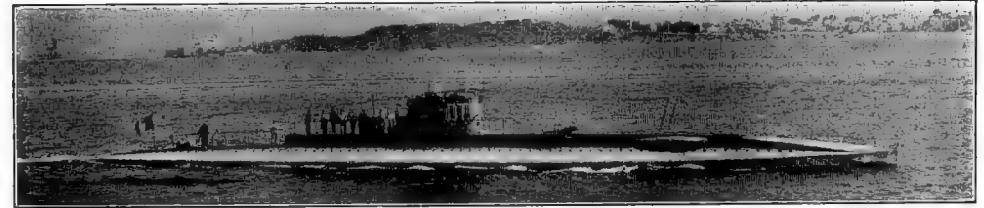
1927 Official Photo.

4 Simonot type, built by A. & C. de la Loire, St. Nazaire: **Naiade** (Oct. 20, 1925), **Sirène** (August 6, 1925), **Nymphé** (April 1, 1926), **Galatée** (Dec. 18, 1925). Displacement: 590 tons surface, 745 tons submerged. Dimensions: 210 (p.p.) \times 17 \times 11½ feet. Machinery: 2 sets 2-cycle Sulzer Diesels, B.H.P. 1,300 on surface, 1,000 submerged.

Following particulars apply to all 12. Complement: 40. 140 to 144 "D" type electric batteries. Speed: 14 kts. on surface, 9.5 kts. submerged. Radius: surface, 2,000 miles at 10 kts; submerged, 90 miles at 5 kts. Endurance equal to 20 days' cruising. Can dive to 45 fathoms. Guns: 1—3 inch A.A., 2 M.G. A.A. Torpedo tubes (19.7 inch): 7. 13 torpedoes carried. Cost stated to be Frs. 8,500,000 each.

Notes.—*Ariane*, *Calypso*, *Circé*, *Naiade*, *Ondine*, *Sirène*, were laid down as Q.121—126 of 1922-23 Programme; others under Coast Defence Vote of Sept. 30, 1923.

2 Fournier Class.



1924 Photo.

2 Schneider-Laubeuf type: **O'Byrne** (June, 1920), **Henri Fournier** (September, 1919), by Schneider, Chalon-sur-Saône. Displacements: 342 tons on surface, 513 tons submerged. Dimensions: about 173.9 \times 15.4 \times 8.2 feet. Machinery: 2 sets Schneider-Carel's Diesel engines, 1000 B.H.P. = 14 kts. on surface. Submerged speed: 8½ kts. Armament: 1—3 pdr. Q.F. gun. Torpedo tubes: 2—18 inch bow and 2—18 inch torpedoes carried in frames under superstructure. Complement, 24.

Notes.—Originally ordered for Rumanian Navy but taken over under French 1917 Programme. Are double-hull boats. *Louis Dupetit-Thouars*, one of this type, condemned 1928.

3 Carissan Class (ex-German).



CARISSAN.

1921 Photo, H. Freund, Brest.

3 ex-German "UB III" type: **Jean Corre** (ex-German UB 155), **Carissan** (ex-German UB 99) and **Trinité-Schillernans** (ex-German UB 94), all completed 1913. Builders, Vulkan, Hamburg. Displacements: on surface 555 tons for *J. Corre*; submerged about 677 tons; other two boats are 516 tons on surface, 651 tons submerged. Dimensions: 181½ \times 19½ \times 12 feet. Periscope depth: 42 feet. Machinery: 2 sets 6 cyl. Diesel engines, B.H.P. 1100 = 14 kts. on surface. Submerged speed: 8 kts. Oil fuel: 35/71 tons. Lubricating oil: 8 tons. Endurance: 7000 miles at 8 kts. on surface; 45 miles at 1½ kts. submerged. Gun: 1—4.1 inch (Krupp "Ubs. a. Tpbts" model). Torpedo tubes: 5—19.7 inch (4 bow, 1 stern). Stowage for 10 torpedoes. Double-hull type. Max. dive: 245 feet. "Crash-dive" to 29.5 feet in 40 secs. Complement, 34.

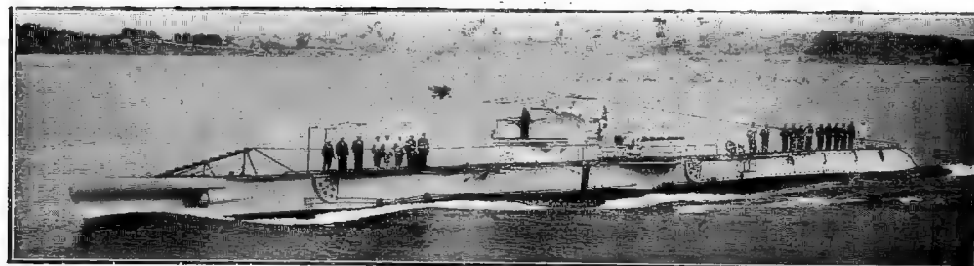
Notes.—Were units of German UB 48—136 and UB 137—249 classes.

†On trial, after surrender to the Allied and U.S. Navies, some boats of this type could not exceed 13.7 kts. on surface and 7.5 kts. submerged.

FRANCE—Submarines.

SUBMARINES—II: SECOND CLASS—continued.

1 ex-German Boat (Mine-laying—Diesel.)



1924 Photo, by courtesy of Ministry of Marine.

1 ex-German "UE 1" type: **Victor Réville** (ex-German U 79, built by Vulkan, Hamburg, completed 1916). Displacements: 755 tons on surface, 980 tons submerged. Dimensions: 186 ft. 4 in. x 19 ft. 10 in. x 15 ft. 1 in. Machinery: 2 sets of Diesel engines, B.H.P. 1100 = 10.6 kts. on surface. Submerged H.P. 600 = 7.5 kts. Endurance: 7880 miles at 7 kts. on surface, 75 miles at 3 kts. submerged. Oil capacity: 77/87 tons. Guns: 1—4.1 inch (Krupp). Torpedo tubes: 2—19.7 inch, bow tube to port, stern tube to starboard, and both above water when in surface trim. 2 horizontal mine-laying tubes under stern. Stowage for 38 mines and 2 torpedoes. Originally unit of German U 71—80 class. Saddle-tank type of hull. Complement, 38.

2 Armide Class.

(To be discarded in near future; *Amazone* temporarily rechristened *Amazone II*.)



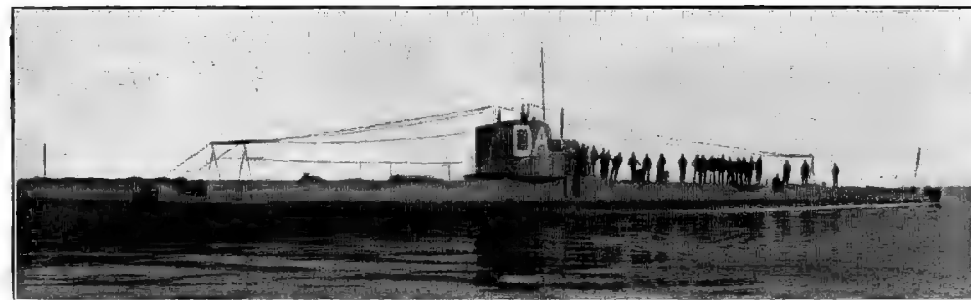
AMAZONE.

1921 Photo, Dussau, Toulon.

2 Schneider-Laubeuf type "De": **Amazone** (1916) and **Armide** (ex-Japanese No. 14, 1915). Built by Schneider et Cie, Chalon-sur-Saône. Displacements: 460 tons on surface, 665 tons submerged. Dimensions: 184½ x 17 x 10½ feet. Machinery: 2 sets, Schneider-Carelis Diesel engines, 2200 H.P. = 15 kts. on surface. Submerged speed: 10 kts. Endurance: 960 miles at 13 kts., 2600 miles at 11 kts. on surface. Armament: 1—1 pdr. (not always carried). Torpedo tubes (all 18 inch): 2 in bow + 6 torpedoes carried in external frames. *Armide* has 2 additional tubes aft. Double-hull type.

Note.—*Amazone* begun for Greek Navy; *Armide* for Japanese Navy; but for all practical purposes they can be considered as a uniform class, taken over for French Navy during War. *Antigone* (sister to *Amazone*) condemned 1927.

1 Daphné Class.

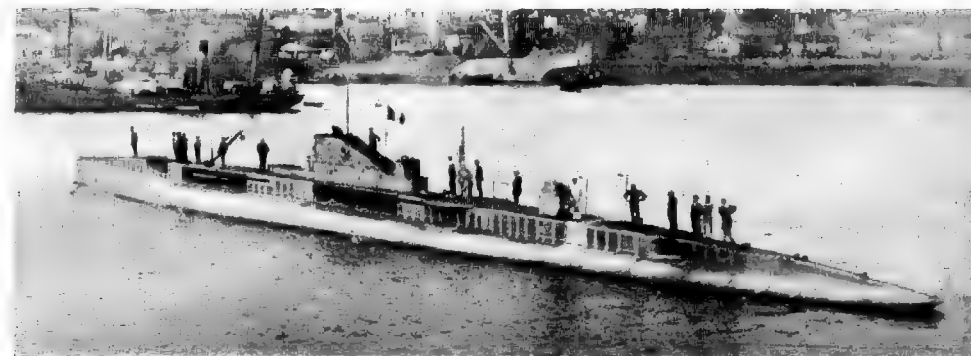


DAPHNÉ.

Photo added 1928.

1 Simonot type: **Daphné** (Toulon D.Y., 1915). Displacements: 720 tons on surface, 950 tons submerged. Dimensions: 223 x 18½ x 12½ feet. Machinery: 2 sets 900 B.H.P. Sulzer Diesel engines, 1800 H.P. = 15.3 kts. on surface. Submerged speed: 11 kts. Endurance: on surface (a) 2800 miles at 14 kts., (b) 4000 miles at 11-12 kts., 100 miles at 5 kts. when submerged. Armament: 1—14 pdr. gun, 10—18 inch torpedo tubes (2 submerged, parallel, at bow; 2 above water, divergent, at bow; 4, in revolving pairs, above water, under superstructure, before and abaft C.T.; 2 at stern, submerged). Complement, 35. Is an enlarged *Archimède* design. Notes.—Begun as Q 108 of 1913 Programme. *Diane* of this type lost during the War. This type was derived from M. Simonot's designs for the larger *G. Zédé* class.

3 Bellone class.



1920 Photo.

3 Hutter type: **Bellone** (Rochefort D.Y., 1914) and **Hermione** (Toulon D.Y., 1913), **Gorgone** (Toulon D.Y., 1915). Displacements, 530 tons on surface; 790 tons submerged. Dimensions: 196.8 x 17.7 x 12 feet. Machinery: 2 sets Sabathé-Diesel engines in first two, Sulzer Diesels in *Gorgone*, 1560 H.P. = 15.8 kts. on surface. Submerged speed, 9 kts. Endurance: on surface, 1300 miles at 12 kts., 115 miles at 5 kts. submerged. Armament: 1—14 pdr. gun. 2—18 inch bow torpedo tubes and 6—18 inch torpedoes carried in external frames under superstructure. Complement, 29.

Notes.—*Bellone* begun as Q 102 of 1912 Programme and completed 1917. *Hermione* (completed 1918) and *Gorgone* (completed 1916), begun as Q 103 and Q 104 of 1913 Programme, as a "Modified *Archimède*" design.

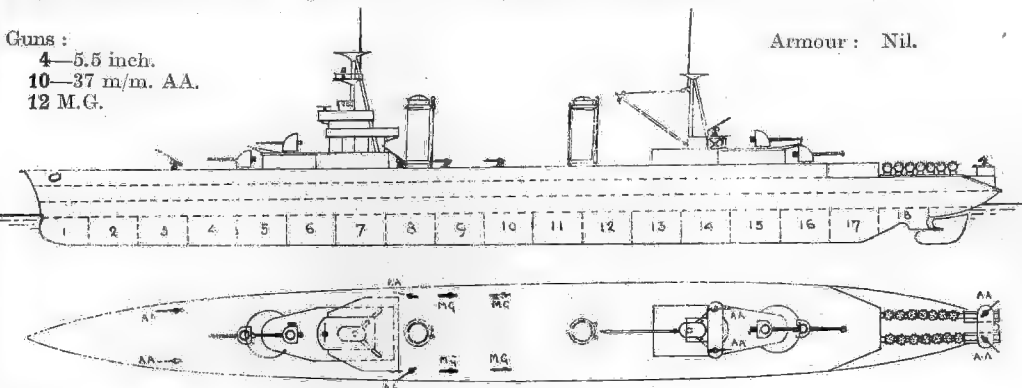
Mine Layers (*Mouilleurs de Mines*.)**PLUTON** (April 10th, 1929).

Displacement, 5300 tons. Complement, 406. Length, 472½ feet. Beam, 51 feet. Draught, 17 feet.

Guns :

4—5.5 inch.
10—37 m/m. AA.
12 M.G.

Armour : Nil.



Machinery : Breguet geared turbines. S.H.P. 57,000 = 30 kts.

Note.—Authorized under 1925 Programme, and laid down at Lorient Dockyard in April, 1928, for completion by March, 1930.

Photo wanted.

CASTOR (ex-Russian Icebreaker *Kozma Minin*) (Swan Hunter, 1916). Displacement, 4300 tons. Dimensions: 248 × 57 × 19 feet. 3 sets triple expansion engines. 6 S.E. boilers. I.H.P. 6400 = 14.5 kts. Coal: 840 tons. Carries 368 mines.

Photo wanted.

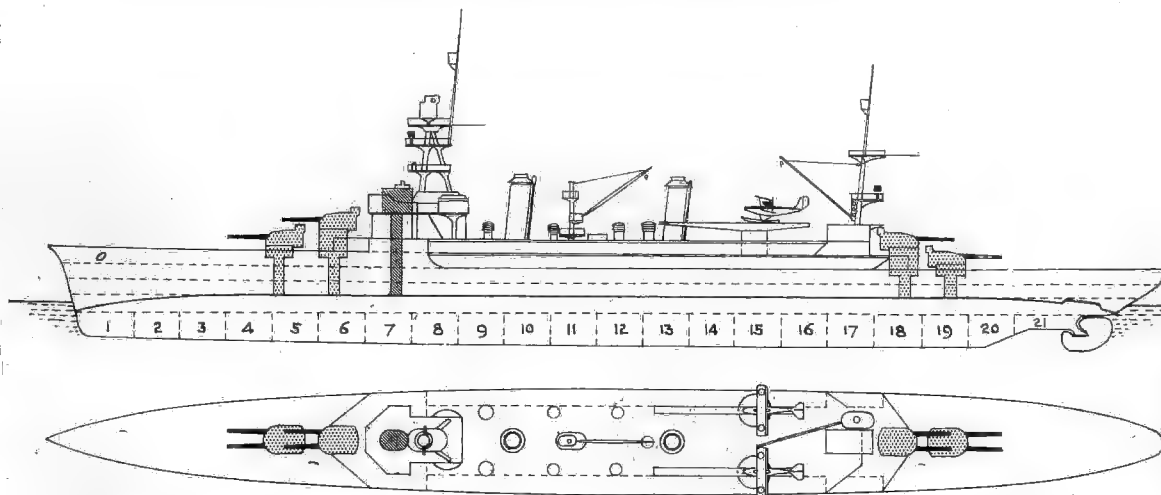
POLLUX (ex-Russian Icebreaker *Ilya Murometz*) (Swan Hunter, 1915). Displacement, 3267 tons. Dimensions: 200 (p.p.), 211 (o.a.) × 50½ × 20 feet. Triple expansion engines. 6 cylindrical boilers. I.H.P. 4950 = 14 kts. 2 screws. Coal: 640 tons. Carries 234 mines.

Note.—Both these vessels were converted into Minelayers by Lorient Dockyard, 1928-29. They will also be used as Depot Ships for submarines and aircraft.

Note.—Following Submarines are fitted as Mine-Layers :—

Name.	No. of Mines carried.	Name.	No. of Mines carried.
<i>Saphir</i> class	32	<i>René Audry</i>	38
<i>Pierre Chailley</i>	40	<i>Victor Réveille</i>	38
<i>Maurice Callot</i>	27		

All described on preceding pages. Several Destroyers are also fitted for minelaying.

Training Ships. (*Écoles d'Application*.)For Gunnery, Old Cruiser *Gueydon*. Obsolete Cruiser *Edgar Quinet* is now employed as Midshipmen's Training Ship. (Both described on earlier pages).

Jeanne d'Arc. Authorized under 1927 Programme and laid down at Penhoët Yard, St. Nazaire, in 1928. Displacement, 6600 tons. Dimensions: 525 × 57½ × 17½ feet. Guns: 8—6.1 or 5.5 inch (in pairs), 4—3 inch AA. Torpedo tubes: 2—21.7 inch. 2 catapults and 2 seaplanes carried. Designed H.P. 32,000 = 26 kts. Oil fuel. Radius at cruising speed: 5000 miles. Will accommodate 156 midshipmen and cadets and 20 instructional officers, in addition to ordinary complement.

Submarine Depot Ship (*Ravitailleur de Sousmarins*).

JULES VERNE. Authorized by 1926 Programme and laid down at Lorient in 1928. Displacement, 5839 tons. Complement 497 (including crews for submarines). Dimensions: 377½ × 59 × 19 feet. 2 sets high-speed 2-cycle Sulzer Diesel engines, with total S.H.P. 7000 = 16 kts. 2 screws. Guns: 4—3.5 inch AA., 4—37 m/m. AA.

Note.—Diesels in this ship are of similar design to submarine engines.

Fleet Repair Ship (*Navire-Atelier*).

1921 Photo, M. Bar, Toulon.

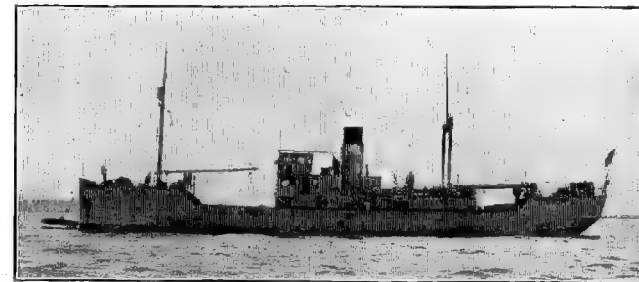
VULCAIN (ex-Russian *Kronstadt*, 1894). 11,000 tons. Dimensions: 460 × 53 × 23 feet. I.H.P. 6,000 = 12 kts. Coal: 1000 tons. Complement, 406. Took refuge at Bizerta with other ships of the Russian Black Sea Fleet under Gen. Baron Wrangel, 1920. Purchased by France, 1921, and refitted to replace *Foudre*, condemned 1921.

Transports (*Transports*), **Supply Ships** (*Soutiens d'Escadre*) and **Refrigerator Ships** (*Navires Frigorifiques*)

J. COEUR.

1920 Photo, Freund.

CHAMPLAIN (April, 1919), **JACQUES COEUR** (April, 1919), **ALLIER** (ex-*Primauguet*, April, 1919), all three by Brest D.Y., **COËTLOGON** (June, 1919), **FORFAIT** (1920), **HAMELIN** (1920), **ALFRED DE COURCY** (ex-*Adour*), (ex-*Lamotte-Picquet*, 1920), by Ch. de Bretagne, Nantes. 700 tons. Dimensions: 157.5 (p.p.), 167.2 (o.a.) × 25.9 × 11 feet (mean draught), 14 feet (max. draught). Guns. 2—3.9 inch, 1 M.G. I.H.P. 1250 = 12.5 kts. (light) and 1100 = 8 kts. (load draught). Triple expansion engines. 1 screw. 2 cylindrical boilers. Coal: 80 tons. 850 miles endurance.



FORFAIT.

1927 Photo, H. Freund.

Transports, Supply Ships, etc.—continued.

Notes.—*Champlain*, *J. Coeur* and *Allier* fitted as Refrigerator Ships. Completed from February, 1920 onwards. Ordered as a Class of 13 Patrol Vessels. Above 7 completed, 2 converted to Surveying Ships *B-Beaupré* and *La Pérouse*; other 4 (*Chateaurenault*, *La Clocheterie*, *Kerguelen*, *Seignelay*) stopped. *Hamelin* and *A. de Courcy* now refitted as Tenders to Naval Air Service, the former with the fleet, and the latter at Bizerta.



1921 Photo, Freund, Brest.

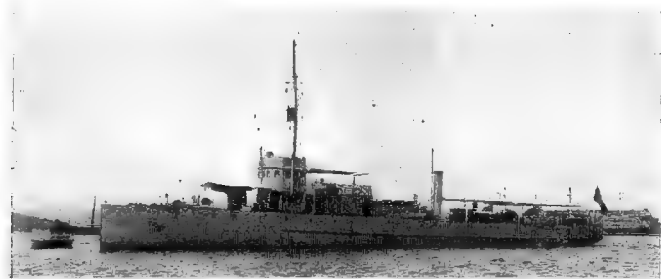
SEINE (1913). 3160 tons. Designed H.P. 1950=13 kts. Guns: 2—3.9 inch, 1—9 pdr. Coal: 295 tons.

LOIRET (ex-S.S. *Paris*, purchased 1900). 2200 tons. Guns: 1—9 pdr. H.P. 1060=11 kts. Coal: 193 tons.

JEANNE ET GENEVIEVE (1917). Length, 147½ feet. Draught, 10½ feet. 485 tons gross.

Note.—Transport *Rhin* has been deleted from this page, as she is now only a Harbour Ship.

Patrol Vessels.



TROUPIER.

1921 Photo, M. Bar, Toulon.

Troupier (1919). 432 tons. Dimensions: 187 × 26 × 6½ feet. Complement, 23 Sulzer-Diesel engines. B.H.P. 420 = 12 kts. Guns: 1—3 pdr. (On Fishery Protection duty.)

MISCELLANEOUS.

Patrol Vessels—continued.



Typical appearance.

1921 Photo, M. Bar, Toulon.

Passereau, Fauvette (1916). 440 to 460 tons. Dimensions as *Troupier*, but *Fauvette* draws only 6 ft. I.H.P. 500 = 10 kts. Coal: 120 tons. Complement, 23.



ESTAFETTE.

1928 Photo.

Estafette (1918), **Sentinel** (1920). 460 tons. Dimensions: 142½ × 24 × 12½ feet. Guns: 1—3 pdr. I.H.P. 430 = 10 kts. Complement, 25. Both for Fisheries Protection.

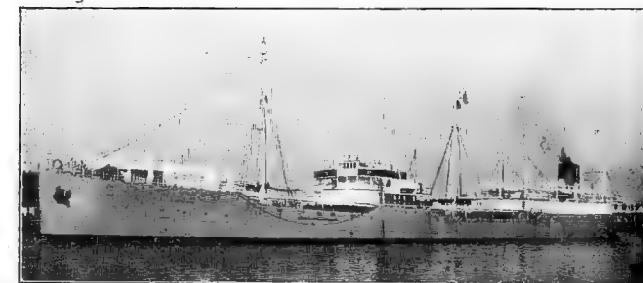
Perce-Neige (1918). 80 tons. Dimensions: 75 × 15 × 4½ feet. Guns: 1—14 pdr., 2—1 pdr. Oil engines. B.H.P. 325 = 13.5 kts.

Caribou, Eole (1917). 420 tons. Dimensions: 131 × 24 × 13 feet. Diesel engines of 300 H.P. in *Caribou*, 250 in *Eole* = 13.5 and 9.5 kts. respectively. 2 screws. Petrol: 22-27 tons.

Aster (1918). 118 tons. Dimensions: 88½ × 18 × 8½ feet. Oil engines. H.P. 250 = 8 kts. 1 screw. Oil: 4 tons.

Primevère (1912). 450 tons. Dimensions: 116 × 22 × 14 feet. H.P. 450 = 8.5 kts. 1 screw. Coal: 30 tons.

Oilers (Pétroliers.)



LE MEKONG.

1929 Photo by favour of M. Henri Le Masson.

LE MEKONG, by Ch. & At. de St. Nazaire (Penhët) (Aug. 31, 1928), **LE NIGER**, by Ch. & At. Maritimes du Sud-Ouest, Bordeaux (April, 1929). and 2 more laid down 1929. Displacement: 13,130 tons full load. Dimensions: 436½ (p.p.), 455½ (o.a.) × 62 × 26½ feet max. draught. Guns: 2—4 inch, 2—2 pdr. 2 sets Burmeister & Wain Diesel engines. H.P. 6600 = 13.5 kts. (exceeded on trials). Capacity of tanks: 33,900 cubic feet. Deadweight: 9600 tons, of which oil fuel absorbs 9000; distilled water, 500; lubricating oil, 100.



1928 Photo, R. Perkins, Esq.

LE LOING (At. & Ch. de la Seine Maritime, Le Trait, 4th April, 1927). 9900 tons. Guns: 2—4 inch, 2—2 pdr. A.A. Dimensions: 403½ × 50½ × 25 feet. 2 sets 4-cycle single-acting Diesel engines by Burmeister & Wain. H.P. 4100 = 13.5 kts. (exceeded on trials). Carries 5900 tons oil. Constructed on Isherwood system.



AUBE.

1921 Photo, H. Freund.

AUBE (July, 1920), **DURANCE** (1920), **NIEVRE** (March, 1921), **RANCE** (July, 1921), all by Lorient D.Y. 2500 tons. Dimensions: 242.8 (o.a.) × 38 × 15.7 feet. S.H.P. 1000 = 10 kts. Breguet turbines. Carry 1500 tons oil. Endurance: 1580 miles at 10 kts. Complement, 70.

Oilers (Pétroliers).—continued.



1927 Photo, H. Freund.

LOIRE (ex-Bakou), Nikolaieff, 1915). Displacement, 12,200 tons. 5400 tons gross. Dimensions: 400 × 53 × 26 feet. Oil engines. H.P. 3400 = 10 kts. Carries 8000 tons oil. (Taken over from Gen. Wrangel at Bizerta.)



1921 Photo, H. Freund.

DORDOGNE (ex-San Isidoro, Armstrong, 1914). Displacement, 24,000 tons. 15,160 tons D.W. Carries 13,000 tons oil. Dimensions: 530 × 66½ × 28 feet. H.P. 4150 = 11.7 kts.



1920 Photo, H. Freund.

GARONNE (1911). 10,800 tons. H.P. 2600 = 13 kts. Carries 7000 tons oil as cargo. Complement, 65.

OILERS, etc.

Oilers (Pétroliers)—continued.



1920 Photo, Freund, Brest.

RHÔNE (1910) 7830 tons. H.P. 2100 = 11 kts. Carries 4500 tons oil as cargo. Complement, 57.

Fleet Tugs. (Remorqueurs de Mer.)

"Fighting Ships" Classification limits List to Vessels of over 550 tons.



Photo wanted.

GOLIATH (1913). 1147 tons. Dimensions: 169.5 × 30.3 × 17 feet. I.H.P. 1400 = 10 kts. 4 Belleville boilers. Coal: 120 tons.

HIPPOPOTAME, MAMMOUTH, MASTODONTE, RHINOCEROS. (1917). 970 tons. Dimensions: 161.3 × 31.2 × 13.7 feet. I.H.P. 1800 = a little over 12 kts.

CENTAURE, MEHARI, SIX FOURS (1913). 600 tons. Dimensions: 153 × 26 × 11.1 feet. I.H.P. 1440 = 11.5 kts. 2-cyl. boilers. Coal: 160 tons.

INFATIGABLE (1913). 785 tons. Dimensions: 153½ × 26½ × 16 feet. I.H.P. 1500 = 12.5 kts.

LOUP CERVIER (1913). 570 tons. Dimensions: 138 × 24½ × 16½ feet. I.H.P. 2400 = 13 kts.

Armed Yacht.



1921 Photo by courtesy of Lieut. de V. Thery.

DIANA (1896). 1400 tons. Dimensions: 256 × 27½ × 15½ feet. Guns: 2—14 pdr. I.H.P. 900 = 10 kts. Coal: 200 tons. Complement, 65. Serves as Yacht for the Senior French Naval Officer in the Levant.

Surveying Ships. (Navires Hydrographiques.)

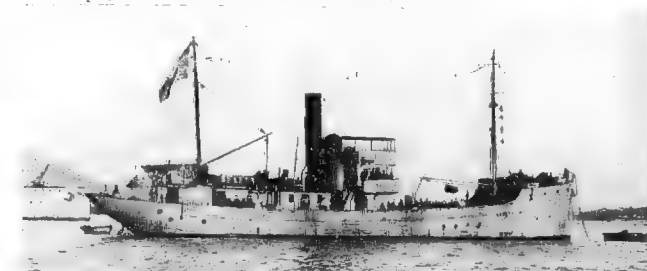
Commissioned for the six months April—November, and reduced to Reserve during other six months of the year.



BEAUTEMPS-BEAUPRÉ.

1921 Photo, M. Bar.

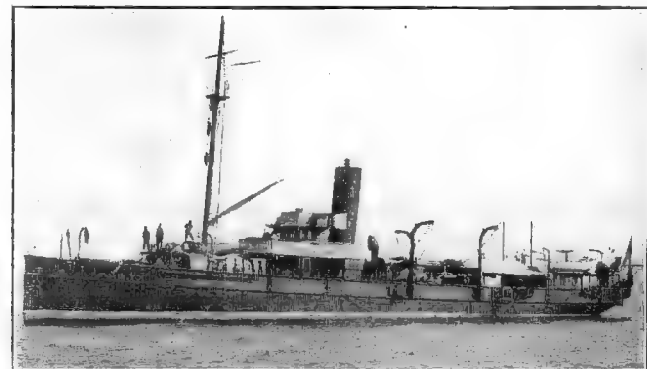
BEAUTEMPS-BEAUPRÉ (ex-D'Estaing) and **LA PÉROUSE** both launched 21st November, 1919. 768 tons. Dimensions: 196.8 (p.p.) × 28.9 × 18 feet. Guns: 1—3 pdr. AA. in La. P., 1—14 pdr. in B.B. 2 Breguet turbines. H.P. 2000 = 17.5 kts. 2 w.t. boilers. Oil: 143 tons. Complement, 104. Ex-Navy Transports, completed as Surveying Ships, 1920. Both built at Brest, D.Y.



ALIDADE.

1921 Photo, M. Bar.

Alidade (ex-Martin-Pecheur), **Astrolabe** (ex-Mauvielle), **Boussole** (ex-Pinson), **Gaston Rivier** (ex-Ortolan), **Octant** (ex-Pirery). 460 tons. Length, 142½ feet. Draught, 12½ feet. I.H.P. 450 = 10 kts. Coal: 120 tons. Complement, 32.



1923 Photo.

Utile (1894). Ex-Tug of 410 tons. Length, 164 feet. I.H.P. 700 = 13 kts. Guns: 1—3 pdr. Complement, 56.

Zelée (ex-Huron) (1901). Ex-Tug of 337 tons gross. I.H.P. 880 = 14 kts.

Sondé (1911). 50 tons. 10 kts.

GERMANY.

Minister of Defence: General W. Gröner.
Chief of Navy Department: Vice-Admiral Räder.

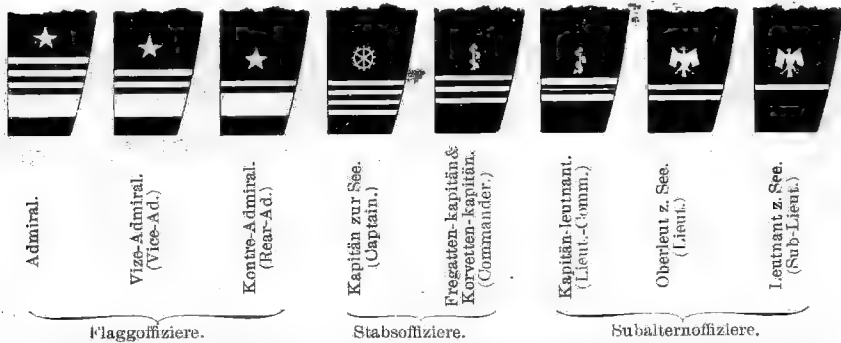
Officially revised by courtesy of the Chief of the Naval Staff, Berlin, 1929.

Naval Guns.

GERMAN FLEET.

Uniforms.

INSIGNIA OF RANK ON SLEEVES.



NOTE.—In above sketch, a star should replace the devices which appear in the 5 junior ranks.

Uniforms and distinguishing marks of rank are the same for officers of all branches of the service; but in place of the star on the sleeve, which distinguishes the military branch, there is worn by:

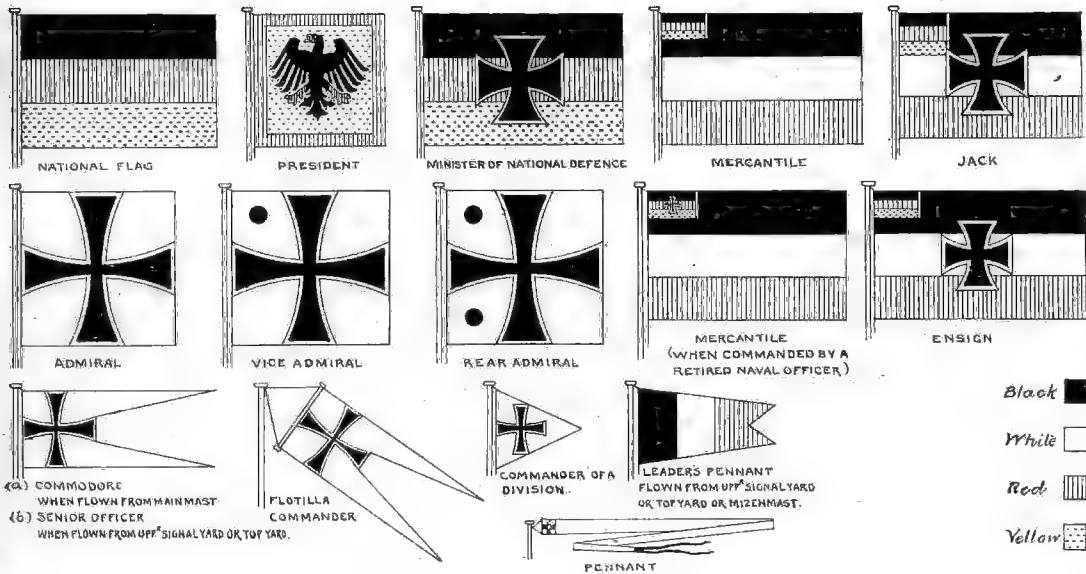
Engineer Officers, a pinion wheel
Medical Officers, the rod of Æsculapius
Accountant Officers, an eagle

Officers of the legal and administrative sections of the Naval Department, when attached to the staff of a command, or acting as advisers on questions concerning naval accounts in the Ministry for Defence of the State, wear silver stripes on their sleeves, with a silver eagle above, and silver facings to their uniforms.

The difference between a Kapitän zur See and a Fregattenkapitän is indicated by stars on the shoulder straps.

Kommodores wear the same sleeve stripes as a Kapitän zur See, but with the cords and shoulder bands of a Flag Officer.

Flags.



Calibre	Usual Naval Designation.	Length in cal.	Date of Model.	Weight of Gun.	Weight of A.P. shot.	Initial Velocity.	Maximum penetration, direct impact against K.O. at			Danger space against average ships at			Approximate Muzzle Energy.
							9000 yds.	6000 yds.	3000 yds.	10,000 yards.	5000 yards.	3000 yards.	
inch. 11	o/m. 28	...	'28	tons. 32.2	lbs. 661.4	foot-secs. 2756	in. 6	in. 10	in. 14	yards. 150	yards. 450	yards. 740	foot tons. 31,600
6.7	17	40	'01	7.5	154.5	2756	...	3	5	80	240	460	8,275
5.9	15	50	...	5.5	...	3084	...	...	...	...	...	...	6,690
5.9	15	45	'09	5	101.4	2920	...	...	5	...	200	420	5,990
5.9	15	40	'01	4.9	...	2756	...	...	3 1/2	...	140	350	5,335
4.1	10.5	45	'16	...	38.2	...	...	...	...	...	...	...	...
4.1	10.5	40	...	1.7	35.2	2756	...	...	...	...	...	...	1,860

Brass cartridge cases to all guns.

Lesser guns: 3.4 inch (88 m/m) firing 22 lb. projectiles in modern and 15 lb. in old models: also 2 inch (4 pdr.) of 55 and shorter calibres.

A.A. guns: 6 inch, 4.1 inch, 3.4 inch War Marks on H.A. mounts ("Flak").

Projectiles: Guns of 11 inch and over fire A.P., Ersatz A.P., H.E., and common shell.

The 1899 and later models have the recoil utilized to return the gun to firing position for pieces over 6 inch. In 6 in. springs are employed. German guns have a lower muzzle pressure than normally obtains.

11 inch, 40 cal., M. '01 in Deutschland and Braunschweig classes.

Personnel.

- (a) TOTAL PERMITTED ESTABLISHMENT, Active List, Officers and Men, inclusive of Administrative Staffs ashore, Shore Establishments, Schools, Coastal Defence Units and Signalling Companies, 1,500 Officers + 13,500 Men = 15,000. All officers and men to enter as volunteers: Officers to serve for 25 years, men for 12 years.
- (b) Total personnel, 1929, 1,040 officers; 13,955 men.

Colour of Ships.

Big Ships: Light grey all over.
Torpedo craft: Varies from black to dull brown.

Mercantile Marine.

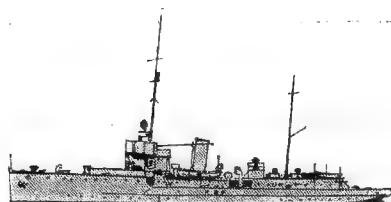
(From "Lloyd's Register," 1929 figures.)
Total gross tonnage, 4,092,552.

Navy Estimates.

1929-30, 180,000,000 marks.
1928-29, 213,000,000 "
1927-28, 220,000,000 "
1926-27, 200,000,000 "

RECOGNITION SILHOUETTES.

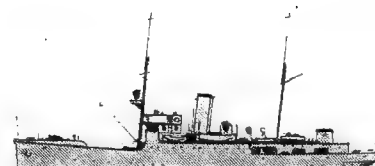
Silhouettes—GERMANY



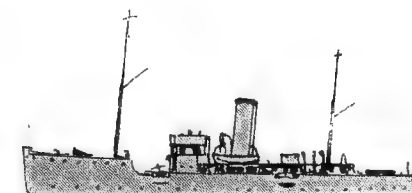
ZIETEN.
(Fishery Protection).



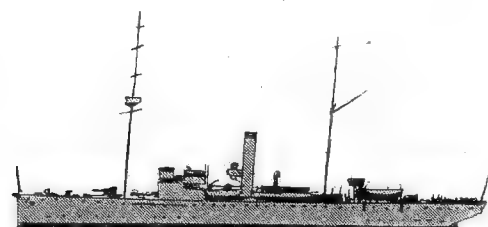
"M" Mine Sweepers.



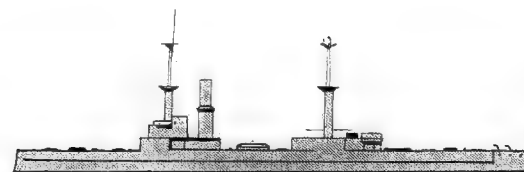
NORDSEE.
(Tender).



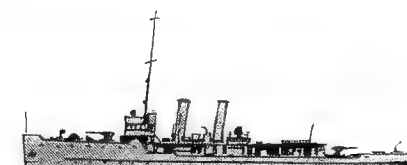
HAL.
(Gunboat).



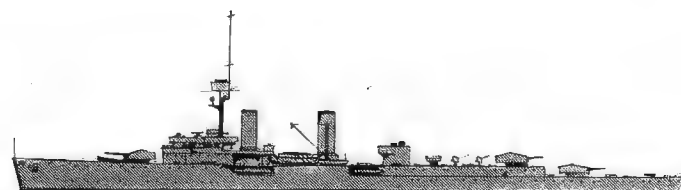
METEOR.
(Surveying Ship).



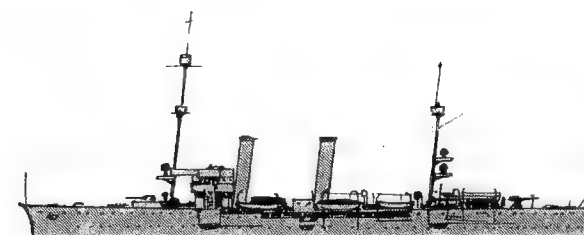
ZÄHRINGEN.
(Target Ship).



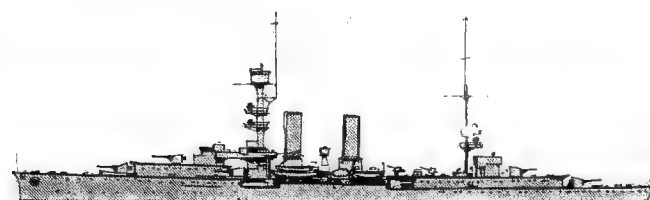
DRACHE.
(Gunboat).



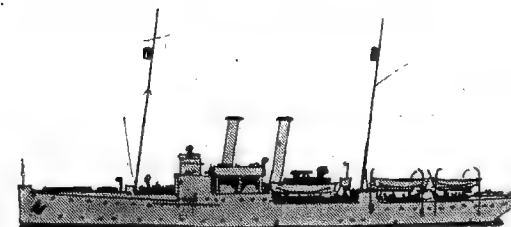
KÖNIGSBERG.
KARLSRUHE.



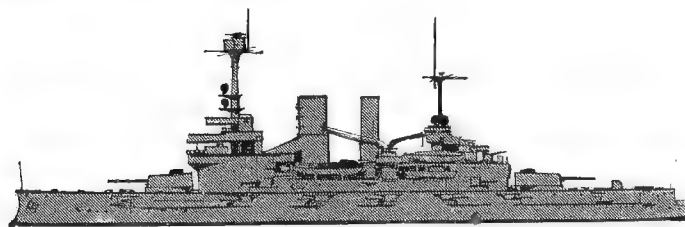
AMAZONE, NYMPHE.



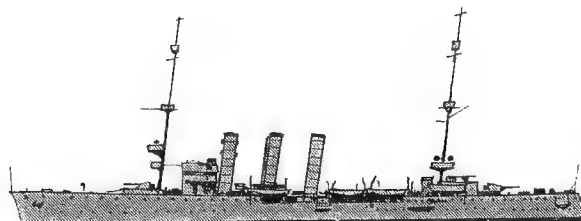
EMDEN.



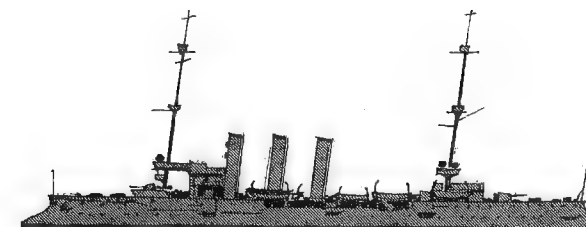
PANTHER.
(Surveying Ship).



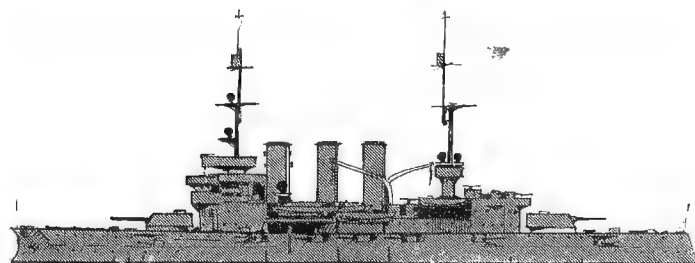
SCHLESSEN.
SCHLESWIG-HOLSTEIN.



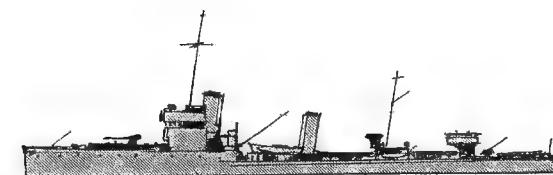
BERLIN.



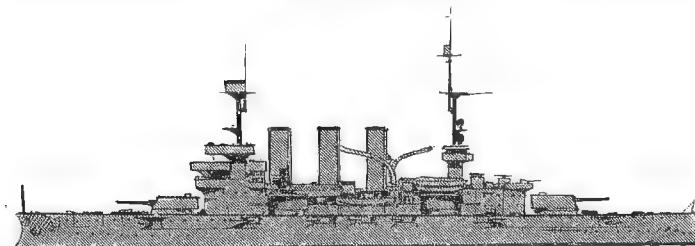
HAMBURG.



ELSASS.
BRAUNSCHWEIG.



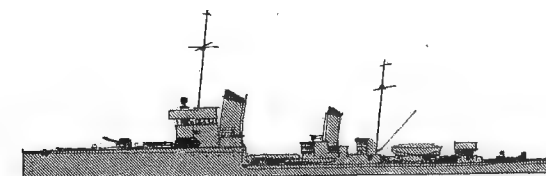
T 185.



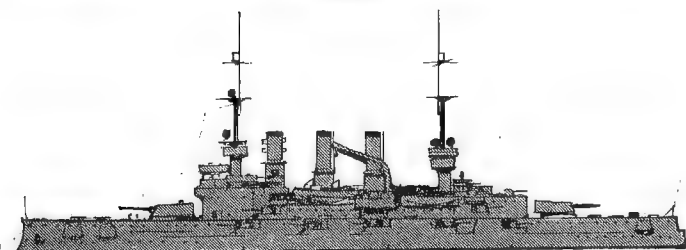
HESSEN.



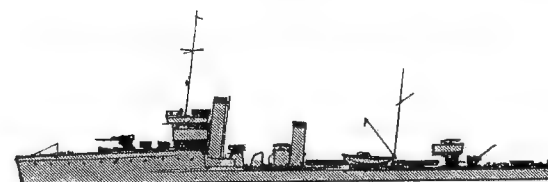
T 190, T 196.



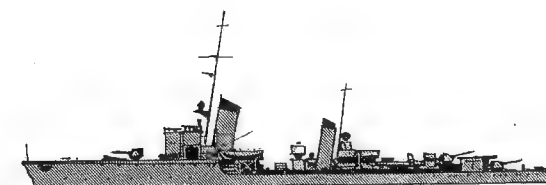
T 155-158.



HANNOVER.
(Reconstructed as SCHLESSEN.)



V 2-5, G 7-11. (9).
S 18, 19, 23 very similar.



Möwe class

BATTLESHIP, rated as ARMoured CRUISER (*Panzerkreuzer*).

Battleship—GERMANY

Battleships—Special Note.—Establishment permitted by Treaty: 6 in Commission, 2 in Reserve. Age Limit: 20 years. Not to be replaced by ships of more than 10,000 metric tons displacement.

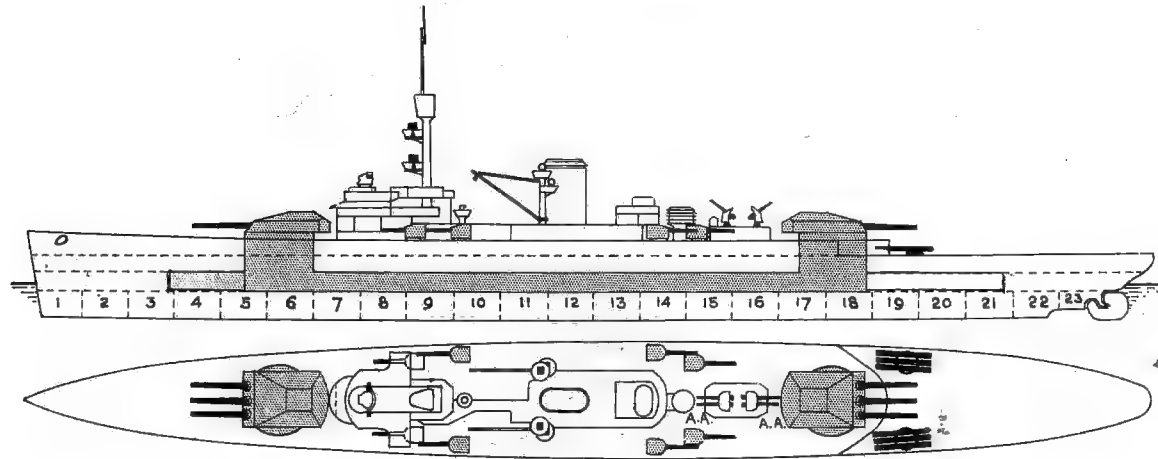
(*Note.*—Though “Panzerkreuzer” is the present official classification, this type actually approximates more closely to a battleship, which is also the class of ship it is being built to replace).

Ersatz *PREUSSEN* (Laid down at Deutsche Werke, Kiel, September, 1928).

Standard displacement, 10,000 metric tons. Complement,

Length, feet. Beam, feet. Draught (reported to be shallow).

Guns :
6—11 inch.
8—6 inch.
4—3.4 inch AA.
Torpedo tubes :
6—19.7 inch (above water).



Armour :

Complete belt and 2 protective decks. Anti-submarine and mine protection is claimed to represent a big advance on anything previously devised.

(Plan furnished by courtesy of the Naval Staff, Berlin, 1929.)

Machinery : 2 sets M.A.N. Diesels, of special design (see *Notes*). H.P. 50,000 = 26 kts.
Radius : 10,000 miles at 20 kts.

Notes.—It is reported that this ship will be named after the late Admiral Scheer. She is the first ship of her size to have an electrically welded hull and to be propelled by Diesel engines. By these means a saving in weight of 550 tons is said to be effected, the engines being of exceptionally light construction, developing one unit of horsepower for every 17½ lbs. of weight. Speed reported as 400 r.p.m. The 11 inch guns are a new Krupp model, firing a 670 lb. projectile, with a range of 30,000 yards and an elevation of 60°. Cost will be £4,000,000. Three more ships of this type are projected to replace *Lothringen*, *Braunschweig* and *Elsass*.

GERMANY—Battleship.

OLD BATTLESHIP (*Linien-schiffe*).

Note.—Old Battleships on this and succeeding pages have had some of their lighter guns landed and placed in store in order to provide better accommodation for crews.

(DEUTSCHLAND CLASS—1ST SHIP.)

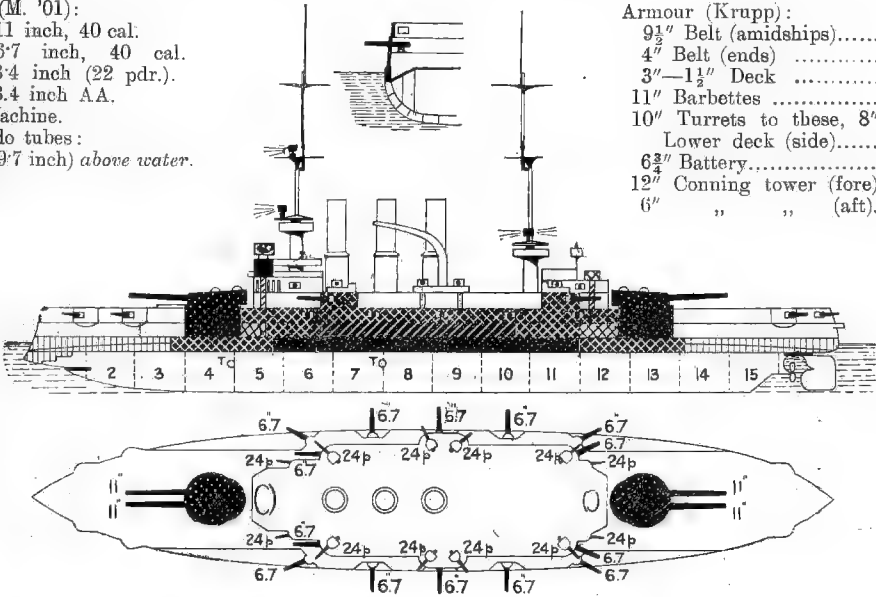
HANNOVER (Sept., 1905).

Displacement, 13,200 tons (metric). Complement, 727.

Length (*waterline*), 413 feet. Beam, 72½ feet. Mean draught, 25¼ feet. Length (*over all*), 419 feet.

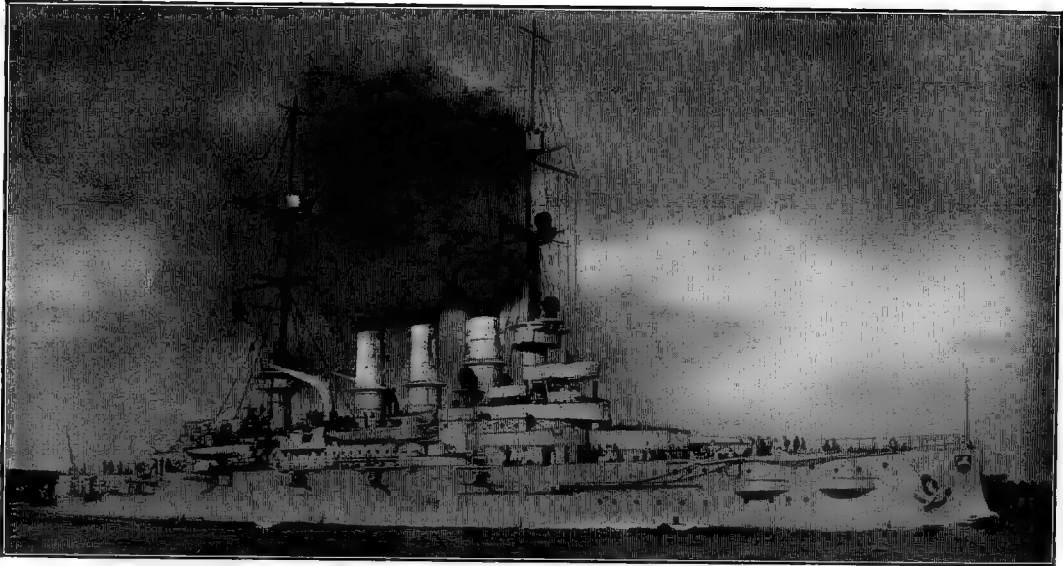
Guns (M. '01):
4—11 inch, 40 cal.
14—6.7 inch, 40 cal.
4—3.4 inch (22 pdr.).
4—3.4 inch A.A.
23 Machine.
Torpedo tubes:
4 (19.7 inch) *above water*.

Armour (Krupp):
9½" Belt (amidships).....
4" Belt (ends)
3"—1½" Deck
11" Barbettes
10" Turrets to these, 8"
Lower deck (side).....
6¾" Battery.....
12" Conning tower (fore)
6" " " (aft).



Machinery: 3 sets 3 cylinder vertical triple expansion. 3 screws. Boilers: 12 Schulz Thornycroft. Designed H.P. 17,000/19,300 = 18 kts. Coal: *normal* 800 tons; *maximum* 1750 tons. Also 200 tons oil fuel. *Nominal* radius 5200 kts. at 10 kts.

Notes.—Built at Wilhelmshaven D.Y., '04/'07; Refitted 1920-21.



HANNOVER.

1925 Photo, Renard.

Special Note.—"Fighting Ships" is officially informed that **HANNOVER** is now under reconstruction. When finished, her appearance will be similar to **SCHLESSEN** on following page.

OLD BATTLESHIPS.

Battleships—GERMANY

(DEUTSCHLAND CLASS—2ND AND 3RD SHIPS.)

SCHLESSEN (May, 1906), **SCHLESWIG-HOLSTEIN** (Dec. 1906).

Displacement, 13,200 tons (metric). Complement, 727 (743 as Flagship).

Length $\left\{ \begin{smallmatrix} (w.l.) & 413 \\ (o.a.) & 419 \end{smallmatrix} \right\}$ feet. Beam, $72\frac{1}{2}$ feet. Mean draught, $25\frac{1}{4}$ feet.

Guns :

- 4—11 inch, 40 cal.
- 14—6 inch, 45 cal.
- 4—3.4 inch.
- 4—3.4 inch AA.
- (Schlesien only 2.)

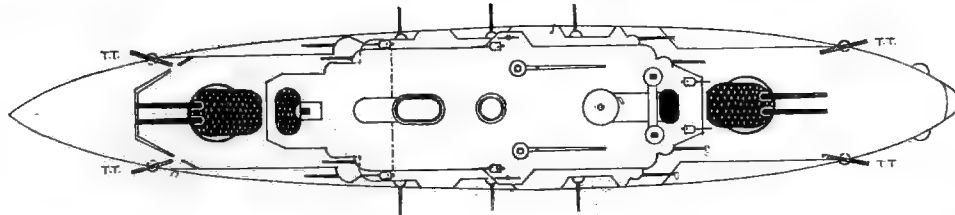
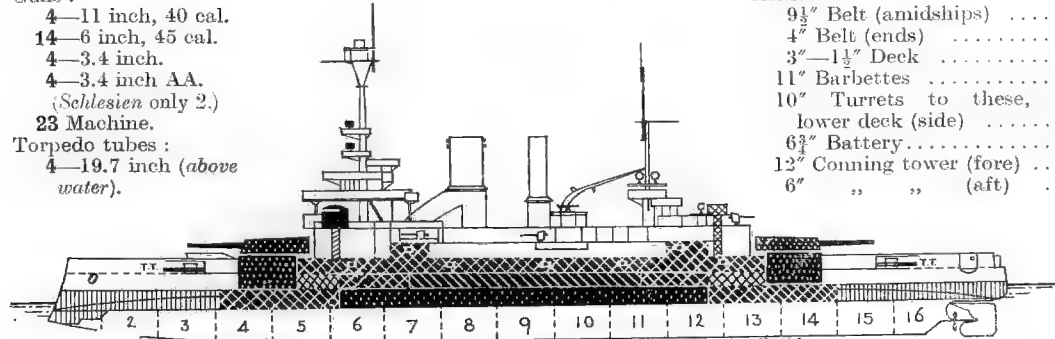
23 Machine.

Torpedo tubes :

- 4—19.7 inch (above water).

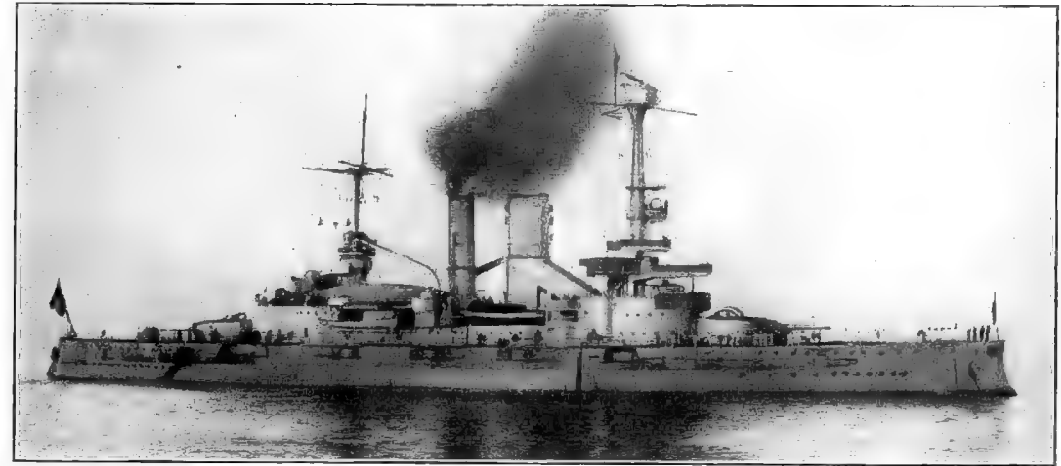
Armour :

- 9 $\frac{1}{2}$ " Belt (amidships)
- 4" Belt (ends)
- 3"—1 $\frac{1}{2}$ " Deck
- 11" Barbettes
- 10" Turrets to these, 8" lower deck (side)
- 6 $\frac{3}{4}$ " Battery
- 12" Conning tower (fore)
- 6" " " (aft)



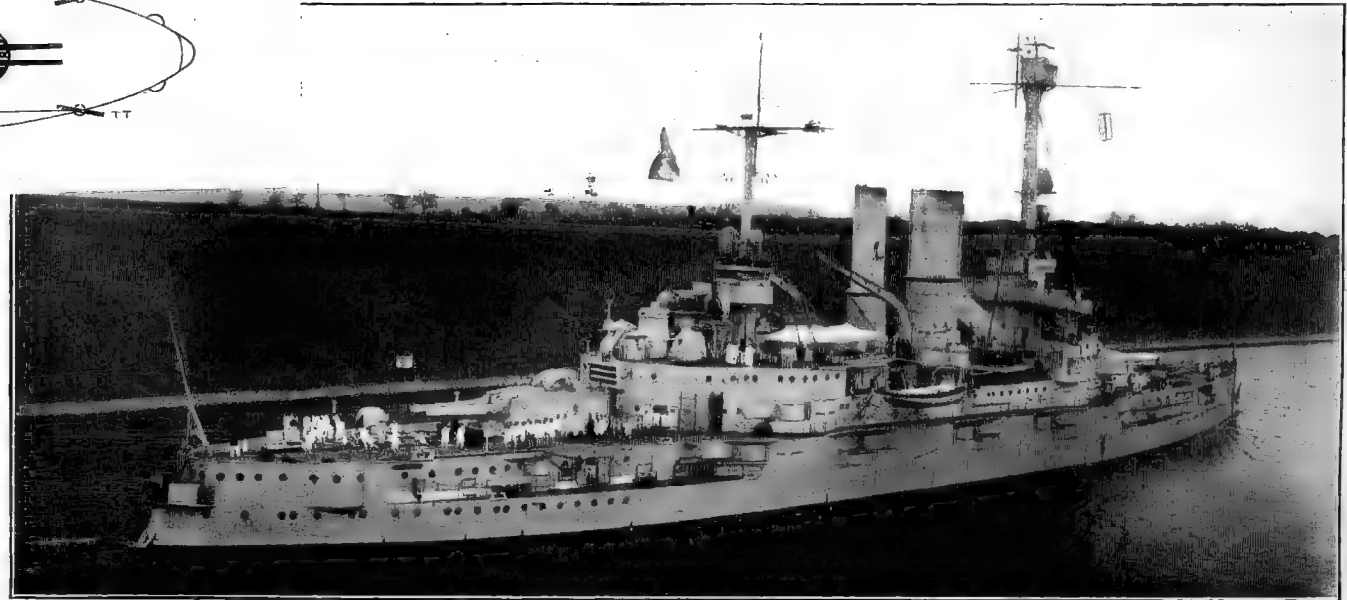
Machinery: 3 sets 3 cylinder triple expansion. 3 screws.
Boilers: 12 Schulz-Thornycroft. Designed H.P. 17,000/19,300
=18 kts. Coal: normal, 800 tons; maximum, 1400 tons.
Oil fuel: 230 tons. Nominal radius: 5900 miles at 10 kts.

Notes.—Schlesien and Schleswig-Holstein built by Schichau, Danzig, 1904-08, and 1905-08, respectively. Both were reconstructed and partially re-armed in 1926-28, having originally been as Hannover, on preceding page.



SCHLESSEN.

1927 Photo.



SCHLESSEN.

1927 Photo Renard Kiel.

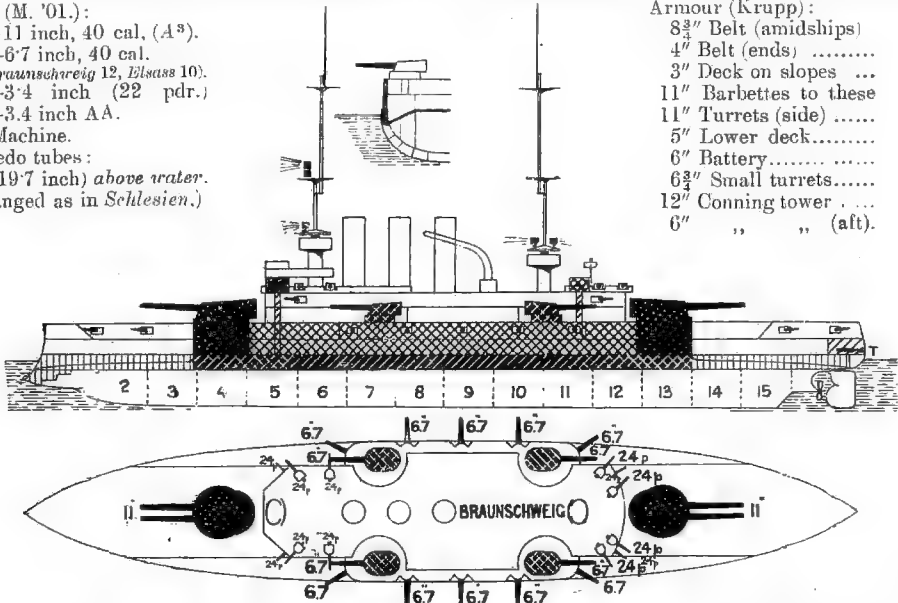


HESSEN. 1925 Photo, Renard, Kiel.

BRAUNSCHWEIG (Dec., 1902), **ELSASS** (May, 1903), **LOTHRINGEN** (May, 1904),
HESSEN (Sept., 1903),
Displacement, 13,200 tons. Complement, 727.
Length (*waterline*), 413½ feet. Beam, 72½ feet. Mean draught, 25¼ feet. Length (*over all*), 419 feet.

Guns (M. '01.):
4—11 inch, 40 cal. (A's).
14—6·7 inch, 40 cal.
(*Braunschweig* 12, *Elsass* 10).
4—3·4 inch (22 pdr.)
4—3·4 inch A.A.
23 Machine.
Torpedo tubes:
4 (19·7 inch) *above water*.
(Arranged as in *Schlesien*.)

Armour (Krupp):
8½" Belt (amidships)
4" Belt (ends)
3" Deck on slopes ...
11" Barbettes to these
11" Turrets (side)
5" Lower deck.....
6" Battery.....
6½" Small turrets.....
12" Conning tower
6" " " (aft).

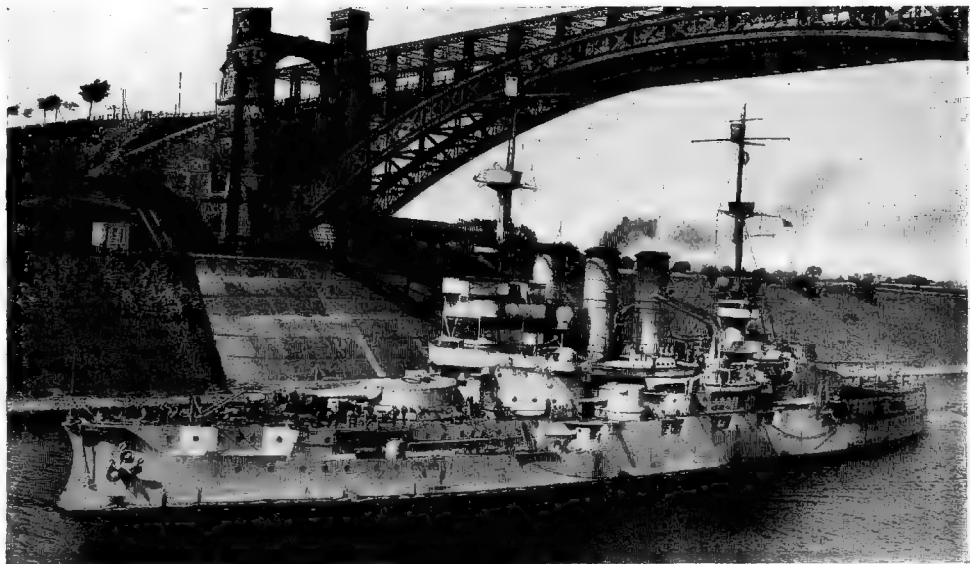


Machinery: 3 sets 3 cylinder vertical inverted triple expansion. 3 screws. Boilers: 8 Schulz-Thornycroft + 6 cylindrical. Designed H.P. 16,000 = 18 kts. Coal: *normal* 700 tons; *maximum* 1670 tons. Also 200 tons of oil (in double bottom). *Nominal* radius: 5500 miles at 10 kts. *Builders*, begun/completed: *Braunschweig* '01/'04 and *Hessen* '02/'05, both by Germania, Kiel; *Elsass* '01/'04, *Lothringen* '02/'05, both by Schichau, Danzig. Recent refits: *Braunschweig* 1919-21; *Elsass* 1920-24; *Hessen* 1923-25. *Lothringen* in reserve, part of armament being landed and stored. *Preussen*, of this class, has been removed from effective list, a new battleship of 10,000 tons (rated as an armoured cruiser) having been laid down to replace her, September, 1928.



ELSASS. (Note absence of small turrets.)

1925 Photo, Renard.



BRAUNSCHWEIG only. (Torpedo tubes replaced after 6·7 inch turret.)

1923 Photo.

1925 CRUISERS.

Cruisers—GERMANY

Cruisers.—Special Note.

Establishment permitted by Treaty: 6 in commission, 2 in reserve.

Not to be replaced under 20 years old.

New ships not to exceed 6000 metric tons displacement, or to be armed with a gun heavier than 6 inch.

(KÖNIGSBERG CLASS—4 SHIPS.)

KÖNIGSBERG (March 26th, 1927), **KARLSRÜHE**
(August 20th, 1927), **KÖLN** (May 23rd, 1928), **LEIPZIG**
(October 18th, 1929.)

Displacement, 6000 tons (metric). Complement, 516.

Length, 554 feet 5½ inches (*w.l.*), 570 feet (*o.a.*) except *Leipzig*,
which is 580 feet (*o.a.*)

Beam, 49 feet 10½ inches.

Designed draught, 17 feet 9 inches.



KÖNIGSBERG.

1929 Photo, Renard.

Guns:

9—6 inch, 50 cal. (Dir.

4—3.4 inch AA. Con.)

18 Machine.

Torpedo tubes:

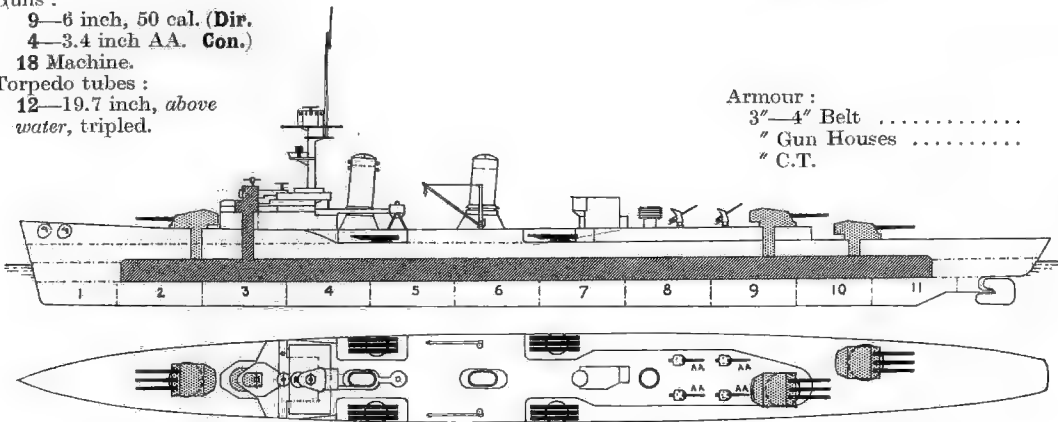
12—19.7 inch, above
water, tripled.

Armour:

3"—4" Belt

" Gun Houses

" C.T.



Machinery: Geared turbines with Diesel engines for cruising purposes. Boilers: Schulz-Thornycroft. Designed H.P. 65,000 = 32 kts. Fuel: 1500 tons oil. Radius: at 14.5 kts., 5500 miles; at 10 kts., 10,000.

Name	Building Yard	Begun	Completed	Trials.	Boilers.	Best recent speed.
Königsberg	Wilhelmshaven	12/4 '26	Spring, 1929		Schulz-Thornycroft	
Karlsruhe	Deutsche Werft, Kiel	27/7 '26	Autumn, 1929			
Köln	Wilhelmshaven	7/8 '26	" 1931			
Leipzig	Wilhelmshaven	18/4 '28				

General Notes.—Every possible expedient for saving weight has been employed in these ships. A very high grade of steel was selected, and electric welding has taken the place of rivetting. There is a minelaying port in stern, which is flat as in British *Adventure*. Screws are placed well forward so as not to affect discharge of mines. *Leipzig* being fitted with bulge protection.

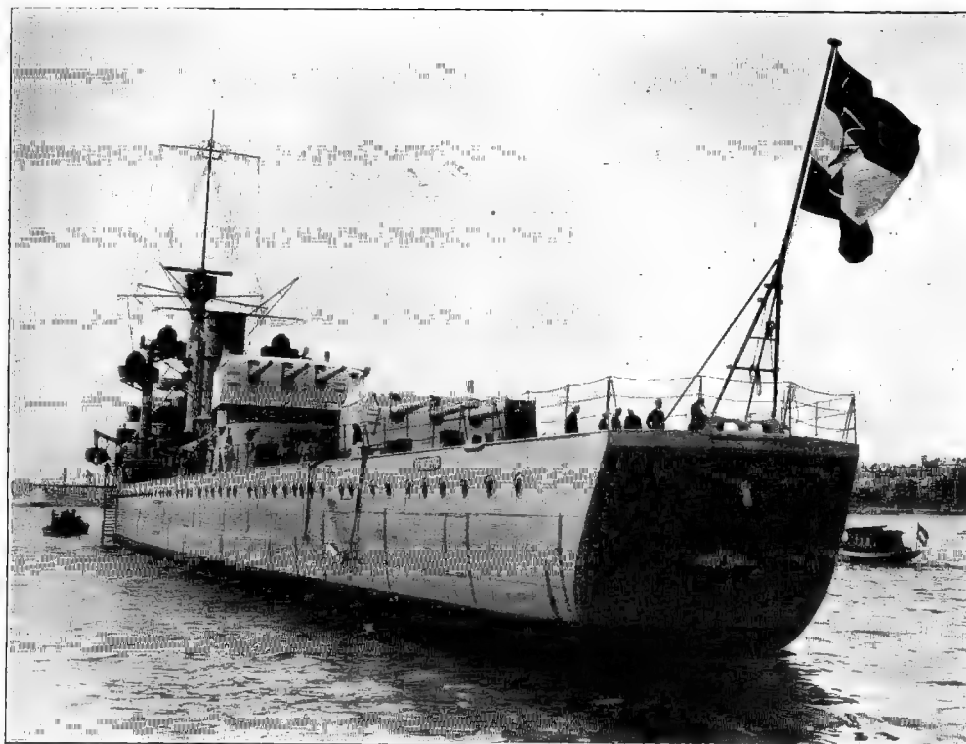
Gunnery Notes.—Triple 6 inch can fire simultaneously at rate of 6 to 8 salvos a minute, and range to 20,000 yards. Cost of guns of the *Leipzig* is estimated at £725,000. Disposition of after turrets is governed by arrangement of ammunition handling rooms.

1925 CRUISERS.



KÖNIGSBERG.

1929 Photo, Renard



KÖNIGSBERG.

1929 Photo, Renard.



KÖNIGSBERG.

1929 Photo, Renard.

1921 CRUISER.

Cruisers—GERMANY

EMDEN (Wilhelmshaven, 7th January, 1925).

Normal displacement, 6000 tons (metric). Complement, 483.

Dimensions : 493 $\frac{3}{4}$ (w.l.), 508 $\frac{1}{2}$ (o.a.) \times 46 $\frac{3}{4}$ \times 17 $\frac{1}{2}$ feet (*mean draught*).

Guns :

8—6 inch 45 cal. (**Dir. Con.**)

2—22 pdr. AA.

18—Machine.

Torpedo tubes :

4—19.7 inch (*above water*).

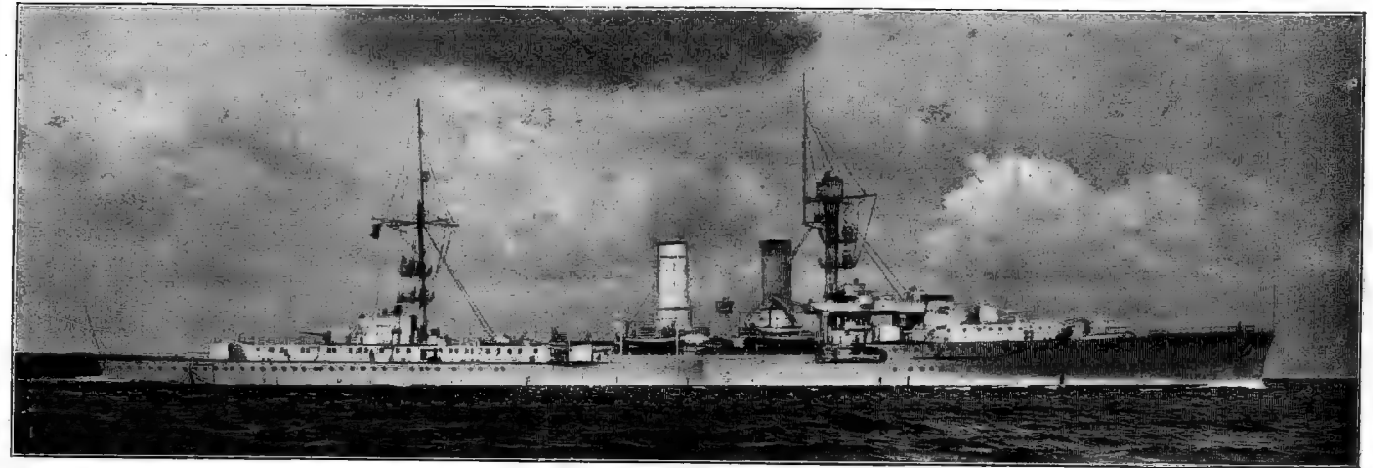
Armour :

3"—4" Belt

" Gun Houses

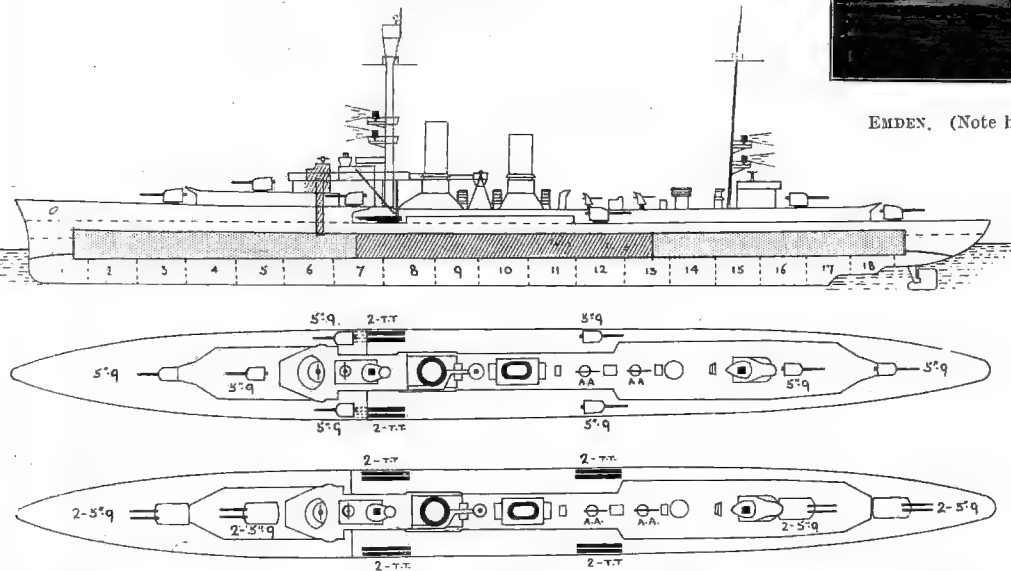
" C.T.

Notes to plans.—1st plan refers to present arrangement of armament; 2nd, that which will ultimately be adopted. Control top lowered and funnels equalised, 1926.



EMDEN. (Note heightened after funnel.)

1927 Photo, Renard.

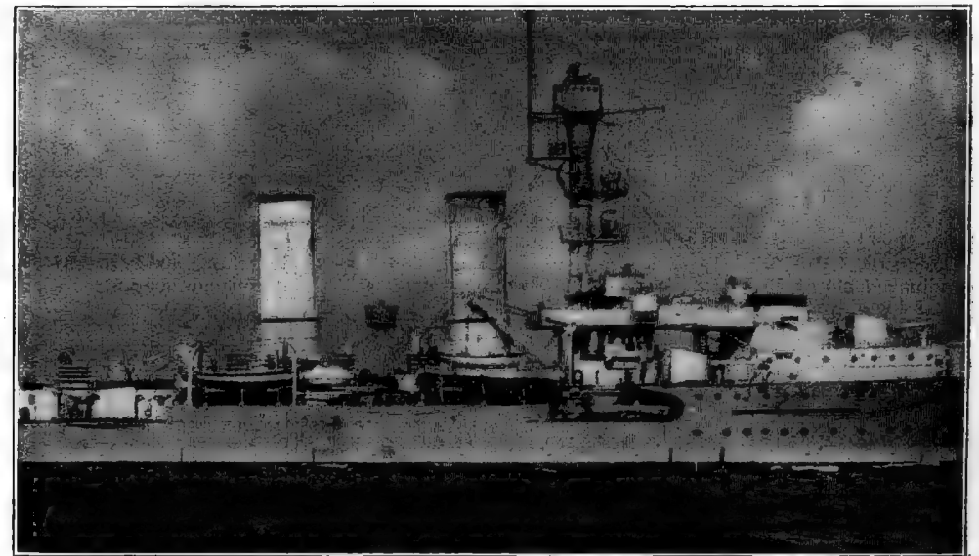


Machinery : Geared turbines. Boilers : 10 Schulz-Thornycroft "Marine" type ($\frac{1}{4}$ coal-burning, 6 single-ended oil-burning). Designed H.P. 46,500 = 29 kts. Fuel : 1120 tons coal + tons oil. Effective cruising radius : 6500 miles. Laid down in summer of 1921; commissioned 15th October, 1925.

Armour Notes.—Belt ceases about 33 feet short of ends.

Engineering Notes.—Designed to maintain a speed of 27.5 kts. in fair weather. Revs. per minute : 2435 H.P. turbines. 1568 L.P. turbines, geared down to 295 R.P.M. on propellers. Mixed firing was adopted in this ship, with the object of being independent of overseas oil supplies if necessary. On trials, designed speed was slightly exceeded with 46,500 H.P.

General Notes.—To save weight, electric welding was extensively used in construction of this cruiser. The tubular foremast is about 5 feet in diameter. Mast modified and second funnel heightened, 1926-27. *Emden* was designed for foreign service, particular attention being paid to accommodation.



EMDEN.

1927 Photo, Renard.

GERMANY—Cruisers.

CRUISERS (*Kreuzer*).

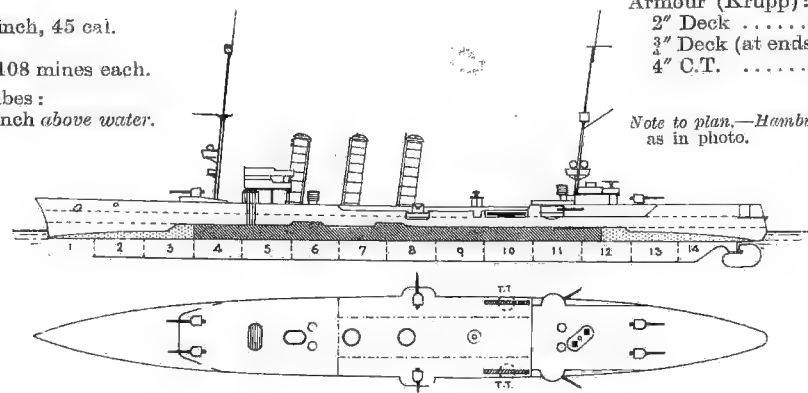
Old Cruisers.

HAMBURG (July, 1903), **BERLIN** (September, 1903).

Normal displacement, 3650 tons *metric*. Complement, 349.

Dimensions: 362.9 × 43.3 × 16½ feet (designed draught).

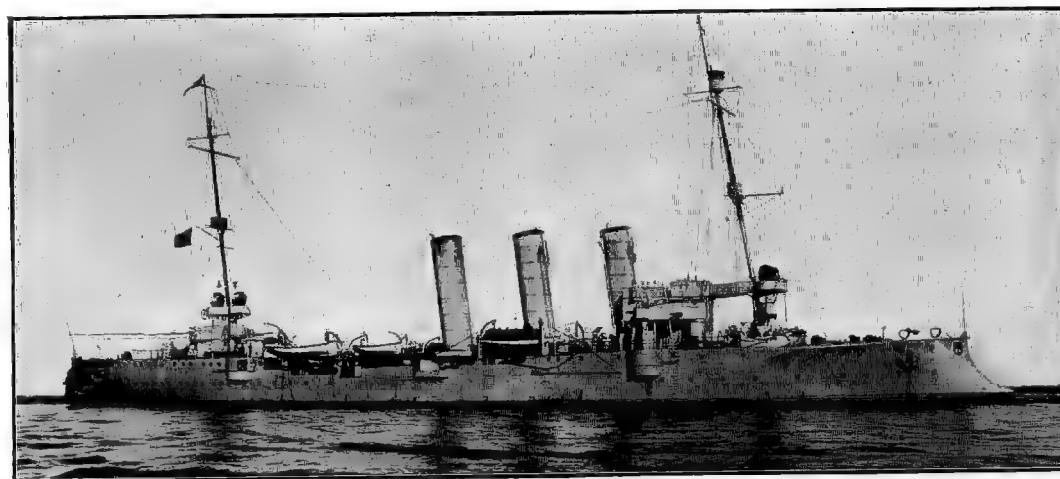
Guns:
8—4.1 inch, 45 cal.
18 M.G.
Can carry 108 mines each.
Torpedo tubes:
2—19.7 inch *above water*.



Armour (Krupp):
2" Deck
3" Deck (at ends) ..
4" C.T.

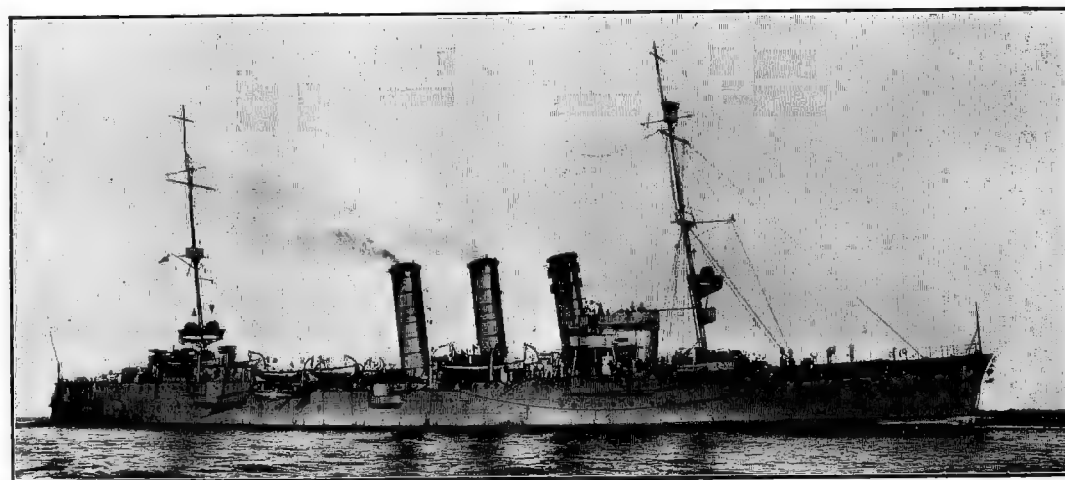
Note to plan.—Hamburg's bow
as in photo.

Machinery: 2 sets 4-cylinder triple expansion. 2 screws. Boilers: 10 Schulz-Thornycroft.
Designed H.P. 10,000 = 22 kts. Coal: *normal*, 400 tons; *maximum*, 860 tons. *Nominal*
radius: 5900 at 10 kts. Begun 1902-3, completed 1904-5. Both in commission as seagoing
Training ships.



HAMBURG.

1925 Photo, Renard.



BERLIN.

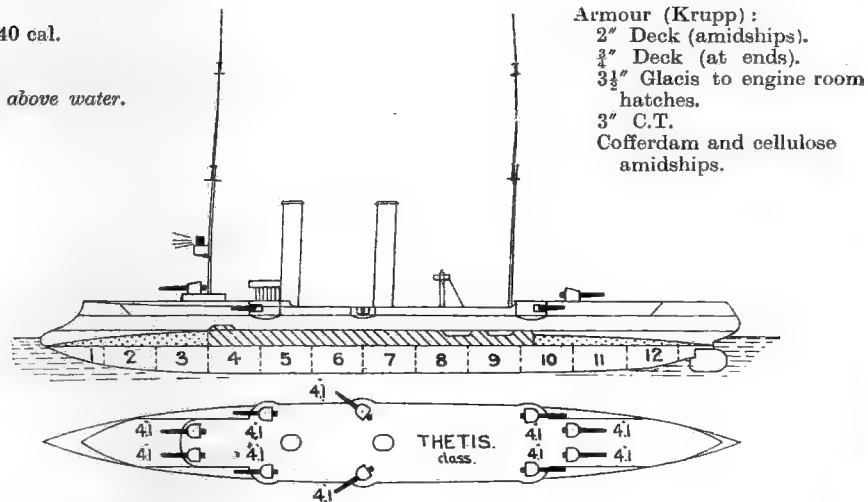
1925 Photo, Renard.

Obsolete Cruisers.**AMAZONE (1900), NYMPHE (1899).**

Normal displacement, 2900 tons. (Sheathed and Muntz metallised). Complement, 329.

Dimensions: $341\frac{1}{8} \times 38\frac{1}{2} \times 16\frac{1}{2}$ feet (designed draught).

Guns:
10—4.1 inch, 40 cal.
18 M.G.
Torpedo tubes:
2—19.7 inch above water.



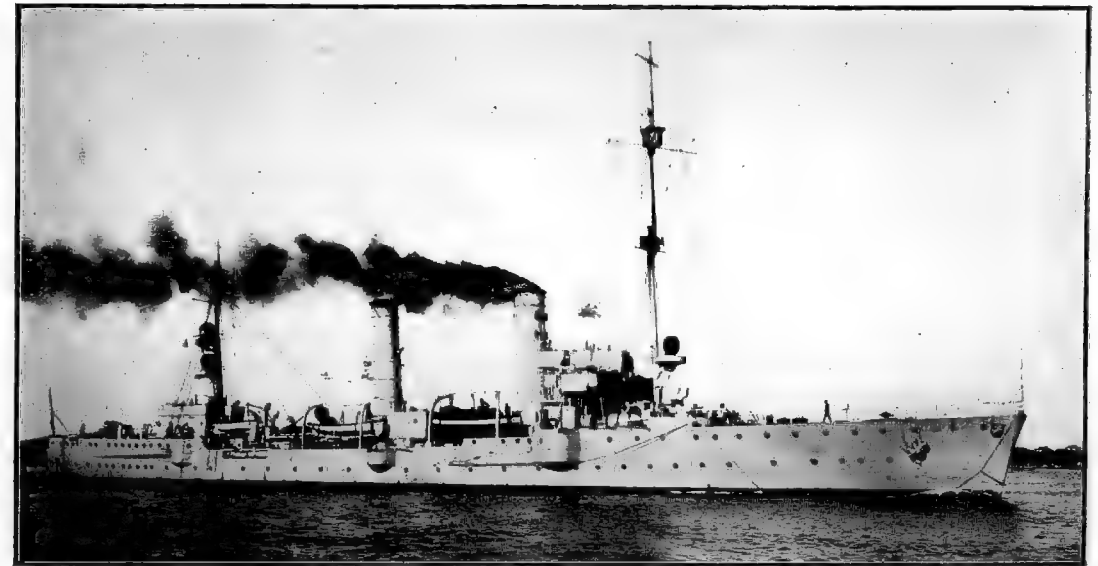
Armour (Krupp):
2" Deck (amidships).
3" Deck (at ends).
3½" Glacis to engine room hatches.
3" C.T.
Cofferdam and cellulose amidships.

Note to plan.—Bows rebuilt as photo.

Machinery: 2 sets 4-cylinder triple expansion. 2 screws. Boilers: 4 Schulz-Thornycroft. Designed H.P. 8000 = 21 kts. Coal: normal, 380 tons; maximum, 580 tons.

Special Note.

Old cruisers, *Arkona*, *Medusa* and *Thetis* disposed of on replacement by *Königsberg*, *Karlsruhe* and *Köln*, 1929.



AMAZONE.

1925 Photo, Renard.

33* Destroyers and Torpedo Boats.

*Permitted Establishment 22 boats + 11 in Reserve.

Totals.	Class.	Begun.	Completed.	Displacement.	Nominal H.P.	Nominal Speed.	T. Tubes.	Coal/Oil †	Complement.
	Destroyers :—			Metric tons		kts.		tons	
6	Wolf	1927	1929	800 1000	21,000t	32	6	—/300	125
6	Möwe	1924	1928	800 1000	23,000t	33	6	—/300	120
3	S 18—23	1912	1914	640	15,000t	32	2	146/65	90
7	{ G 11—7 V 5—2 }	1911	1912	{ 660 670 }	16,000t	32	2	{ 156/80 150/77 }	73
2	{ T 196 T 190 }	1911	1911	800	16,000t	33	4	{ 191 175 }	98
1	T 185	1910	1910	800	16,000t	32	4	173/84	98
	Torpedo Boats :—								
1	W 108	(This vessel does not appear to have got beyond the projected stage.)							
7	T 158—151	1907	1908	675	10,900	30	3	180	97

†An additional deck load of about 20 tons coal can be carried in most of the boats of pre-war build.

General Notes to Table.

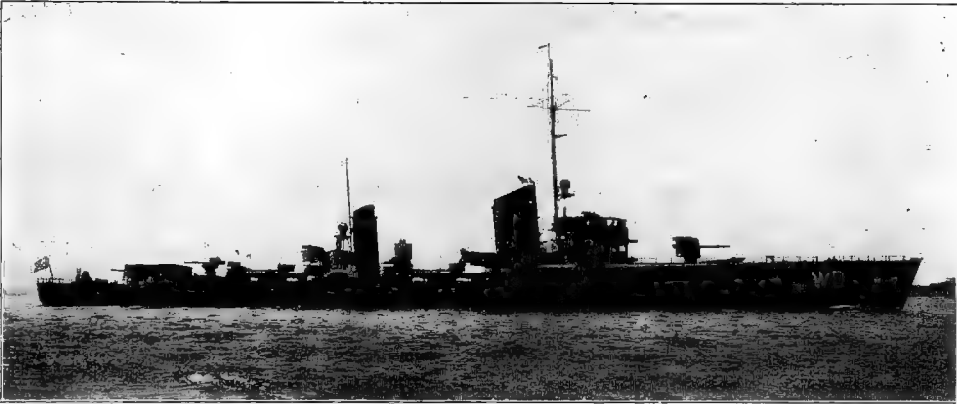
Age limit under Treaty, 15 years. Displacement of new destroyers must not exceed 800 metric tons, and of torpedo boats 200 metric tons.

Practically all German Torpedo Craft now in service have had fore funnel heightened and clinker screen added.

“G boats” built by Krupp’s Germania Yard, S boats by Schichau, V boats by Vulkan (Stettin). All are officially rated as “Grosse Torpedoboote,” or “Big Torpedo Boats,” and not as Destroyers (“Torpedoboote-Zerstörer”). Unless otherwise noted, all boats have Schulz-Thornycroft (or “Marine Type”) boilers. The details tabulated are generally simplified to the average design of each group.

“T-boats” were built with the usual G, S and V builders’ index letters, but were given letter T to avoid duplication of numbers with the later boats numbered from V 1 up to S 23, and the “War Types,” V 25—S 223. In description of T boats, G refers to Krupp-Germania boats, S to Schichau boats, and V to Vulkan boats.

1926.



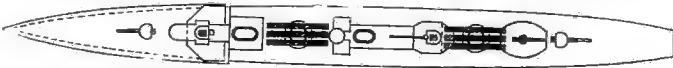
WOLF. 1928 Photo, Renard.
6 Wilhelmshaven Yard: *Itis, Wolf* (both Oct. 12th, 1927), *Jaguar, Leopard, Luchs, Tiger* (all March, 1928). Laid down 1927 as W 109–114, for completion in summer of 1928 to replace worn out destroyers and torpedo boats. Displacement: 800 tons (1000 tons deep load). Dimensions: 292 (p.p.), 304 (o.a.) × 28½ × 9 feet. Guns: 3—4.1 inch, 45 cal. Torpedo tubes: 6—19.7 inch (tripled parallel). Designed S.H.P.: 23,000=34 kts. Geared turbines and Schulz-Thornycroft boilers. Oil fuel: 300 tons. Complement: 125. Other details not yet reported, but are of same general type as *Möwe* class, with minor improvements.

1924-25.



ALBATROSS. (All now have above appearance.) 1928 Photo, Wille. Schäfer, Kiel.
6 Wilhelmshaven Yard: *Möwe* (March 4th, 1926), *Albatross, Greif, Seeadler* (all three July 15th, 1926), *Falke, Kondor* (both Sept. 22nd, 1926). Displacement: 800 tons / 1000 tons deep load. Dimensions: 277½ × 27½ × 9½ feet draught. Guns: 3—4.1 inch, 45 cal., 2 S.L. Torpedo tubes: 6—19.7 inch (tripled parallel). Geared turbines. 3 Schulz-Thornycroft boilers. Designed S.H.P. 23,000 = 33 kts. (exceeded on trials). Oil fuel: 300 tons. Complement: 120.
Notes.—Laid down under 1924 and 1925 Programmes, as W 102-107. *Möwe* commissioned October 1st, 1926, others passed into service during 1927, replacing old destroyer T 175 and the worn-out torpedo boats of T 149 type. Have longitudinal framing and double bottom to hull. Guns said to elevate to 80°. The cost of these vessels is extraordinarily high, working out at about £215 per ton.

WOLF and Möwe types.



DESTROYERS.

T.B.D.—GERMANY

1912-13.



S 23.

1928 Photo, Renard, Kiel.

3 Schichau: **S 18, S 19, S 23.** Launched 1913. 640 tons. Dimensions: 234½ × 24½ × 9½ feet. Armament: 2—4.1 inch, 45 cal. *S 18, S 23*, 7 M.G. *S 19*, 2 M.G. Torpedo tubes: 2—19.7 inch. Designed S.H.P. 15,700 = 32 kts. Melms-Pfenninger turbines. Fuel: 146 tons coal + 65 tons oil. Complement, 90.

S 18-23.



1911-1912 (and two 1913 Replace Boats).



G 10.

1928 Photo, Renard, Kiel.



V 1.

1928 Photo, Renard, Kiel.

4 Krupp-Germania: **G 7, G 8, G 10, G 11** (launched 1911-12).

3 Vulkan: **V 2, V 3** (1911), **V 5** (1913).

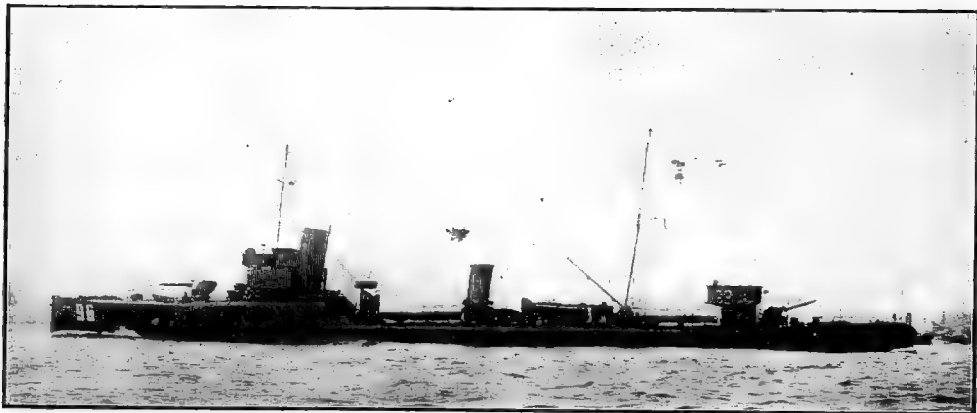
Displacement 564 to 570 tons *normal*; 600 to 670 tons *full load*. Dimensions: *G* boats, 234½ × 24½ × 9½ feet; *V* boats 234½ × 24½ × 9½ feet. Armament: 2—4.1 inch, 45 cal. Torpedo tubes: 2—19.7 inch. Machinery: turbines, Parsons in Germania boats, A.E.G.-Curtis in Vulkan boats. Designed H.P.: *G* boats, 16,000 = 32 kts.; *V* boats, 17,000 = 32 kts. Fuel: *G* boats, 156 tons coal, 80 tons oil; *V* boats, 150 tons coal, 77 tons oil. 3 Schulz-Thornycroft boilers (1 oil burning). Complement, 90.

Notes.—*V 5* and *V 6* built to replace original *V 5* and *V 6* sold to Greece.

GERMANY—Destroyers and T.B.

DESTROYERS—*continued.*

1910-11.

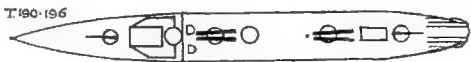


T 196.

1925 Photo, Renard.

1 Krupp Germania, **T 196** (ex *G 196*).
1 Vulkan, **T 190** (ex *V 190*). } launched 1911.

Displacements: *G* boat 648 tons, *V* boat 656 tons *normal* (800 tons *full load*). Dimensions: 242½ × 25½ × 10½ feet. Armament: 2—4.1 inch, 45 cal. Torpedo tubes: 4—19.7 inch. Machinery: Parsons turbines in *G* boat, A. E. G.—Curtis in *V* boat. Designed H.P.: *T 196*, 18,200=33 kts.; *T 190*, 18,000=32 kts. Fuel: *T 196*, 191 tons; *T 190*, 175 tons coal, both 55 tons oil. 4 Schulz-Thornycroft boilers (1 oil burning). Complement 98.



1909-10.

1 Vulkan, **T 185** (ex *V 185*) (1910)

Displacements: 637 tons (718 tons *full load*). Dimensions: 242½ × 25½ × 10½ feet. Armament: 2—4.1 inch, 45 cal. Torpedo tubes: 4—19.7 inch. Machinery: A. E. G. Curtis turbines. Designed H.P. 18,000 = 32 kts. Fuel: 173 tons coal and 84 tons oil. Complement, 98.

TORPEDO BOATS.

1926.

Note.—The construction of the 200 tons Motor Torpedo Boat W 108, originally to have been laid down at Wilhelmshaven, in 1927, has not so far been proceeded with. It is believed that the funds voted on this account, amounting to over £220,000, have been devoted to Diesel engineering and other experimental work. The vessel must therefore be considered as merely projected, though it has been reported that she is to be named *Blitz*, and will be employed as wireless control vessel for target ship *Zähringen*.

1907-08.



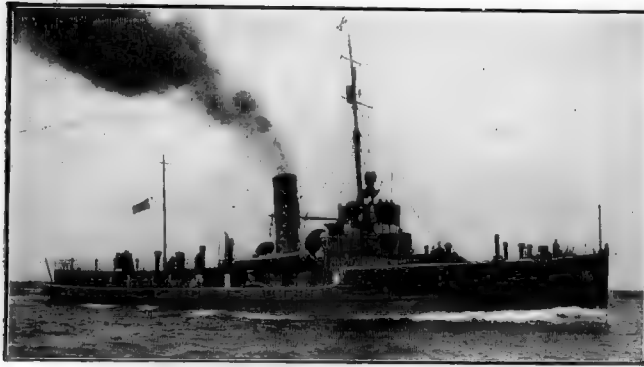
T 158.

1928 Photo, Renard.

7 Vulkan, **T 151-153, T 155-158** (ex *V 151*, etc.), launched 1907-8. Displacement: 554 tons, *normal* (675 tons *full load*). Dimensions: 237½ × 25½ × 9½ feet (*mean draught*). Guns: 2—3.4 inch (15 pdr.), 45 cal. Torpedo tubes: 2—19.7 inch (paired). Machinery: Reciprocating engines. Designed H.P. 10,900=30 kts. Oil: 175 tons. Complement, 97.

MISCELLANEOUS VESSELS.

Tenders.



HELA.

1925 Photo, Renard.

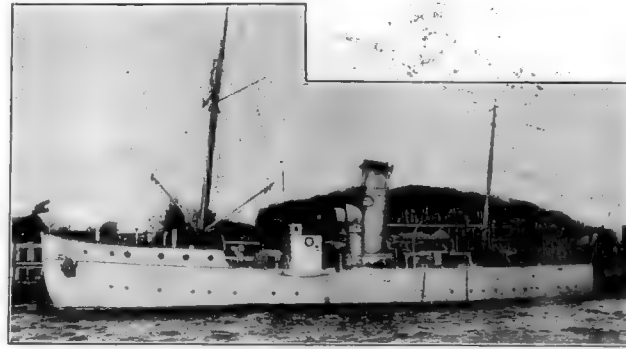
HELA (ex Minesweeper *M 135*). (March 15th, 1919), **FUCHS** (ex *M 130*, 1918), **WACHT** (ex *M 133*, 1920), **DELPHIN** (ex *N 108*, 1918), **FRAUENLOB** (ex *M 154*, 1920), **JAGD** (ex *M 82*, 1918). Displacement, 535 tons, except *Jagd*, 500 tons. Dimensions: $184 \times 24 \times 7\frac{1}{2}$ feet. Armament: 2—3.4 inch. Machinery: 2 sets triple expansion. Boilers: 2 Schulz water tube. 2 screws. Designed H.P., 1800 = 16 kts.



1925 Photo, Renard.

DRACHE (Germania, 1908). 790 tons. Dimensions: $177 \times 30\frac{1}{2} \times 9\frac{3}{4}$ feet. Complement 66. Guns: 2—3.4 inch. H.P. 2200 = 16 kts. Coal: 150 tons.

Tenders—continued.



HAI (Geestemünde, 1907). 640 tons. Dimensions: $141 \times 28\frac{3}{4} \times 9\frac{3}{4}$ feet. Complement 53. Armament: 2—3.4 inch. H.P. 1100 = 12 kts. Coal: 84 tons.

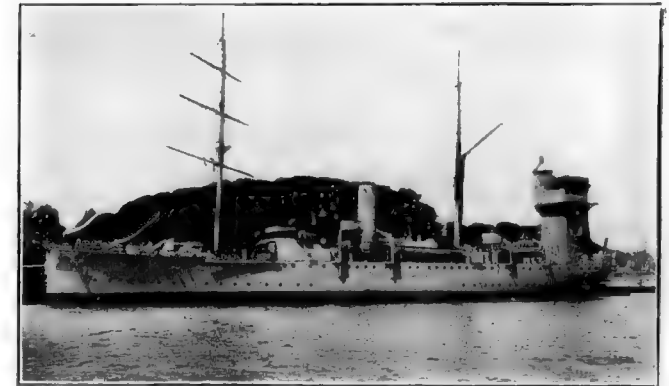


1928 Photo.

GRILLE (ex-Trawler *Von der Goltz*, 1916). Purchased 1927 for use as Tender to Mining and Torpedo School. 470 tons. Dimensions: $118\frac{3}{4} \times 24 \times 10\frac{1}{2}$ feet. 1 screw. H.P. 400 = 10 kts. Classed as Experimental Vessel (*Versuchsfahrzeug*).

Miscellaneous Vessels—GERMANY

Surveying Vessels (*Vermessungsfahrzeuge*).



1928 Photo, Renard, Kiel.

METEOR (Danzig, 18 Jan., 1915). 1200 tons. Complement, 111. Dimensions: $219\frac{1}{4} \times 33\frac{1}{2} \times 11\frac{1}{4}$ feet. Guns: 2—3.4 inch A.A. Machinery: 2 sets triple expansion. 2 screws. Boilers: 4 Schulz-Thornycroft. Designed H.P. 650 = 11.5 kts. Coal: tons. Completed June, 1925. On foreign service.



1922 Photo, Lieut. Stensen, R.D.N.

PANTHER (April, 1901). Ex-Gunboat converted for Surveying Service, 1920-21. Displacement, 980 tons. Dimensions: $210.3 \times 31.8 \times 10.2$ feet. Complement, 130. Guns: 2—3.4 inch. Machinery: Triple expansion. 2 screws. Boilers: 4 Schulz-Thornycroft. Designed H.P. 1350 = 14 kts. Coal: 240 tons. Employed on Baltic Coast.

GERMANY—Miscellaneous.

Fleet Tender & Repair Vessel.



1925 Photo, Renard.

NORDEN (Atlas Werke, Bremen, 1914). 830 tons. Complement, 27. Dimensions: $110\frac{1}{2} \times 30\frac{3}{4} \times 12\frac{3}{4}$ feet. Armament: Nil. H.P. 1680 = 12 kts. 2 screws.

Fishery Protection Vessel (*Fischereischutzboot*).



1927 Photo, Topical.

ZEITEN (ex-M138, Tecklenborg, Feb. 17th, 1919). Displacement: 550 tons. Dimensions: $183\frac{1}{2} \times 24 \times 7\frac{1}{2}$ feet. Guns: none. 2 sets Diesel engines each 420 B.H.P. = 14 kts. Complement, 43. Fuel: 90 tons.

Note.—Ex-Minesweeper converted for present service in 1924.

MISCELLANEOUS VESSELS.

Training Ship (*Segelschulschiff*).



1928 Photo, Wilh. Schüfer, Kiel.

NIOBE (July 18th, 1899, rebuilt 1923). Displacement: 650 tons. Dimensions: $151\frac{1}{2} \times 30\frac{3}{4} \times 15\frac{3}{4}$ feet. Auxiliary motor, H.P. 240 = 7 kts. 1 screw. Oil fuel, 20 tons.

Target Service Ship (*Fernlenkzielschiff*).

Appearance as Silhouette.

ZÄHRINGEN (1901). Ex-battleship, completely reconstructed 1926-28 for use as a wireless controlled target ship on similar lines to British *Centurion*. Displacement: 11,800 tons. Dimensions: $393\frac{1}{2} \times 68\frac{1}{2} \times 25$ feet. H.P. 5000 = 13 kts. 2 screws. Oil fuel and automatically fired boilers.

Mine Sweepers (*Minensuchboote*).



PELIKAN (ex M 28).

1925 Photo, Renard.

Mine Sweepers—continued.



NAUTILUS (ex M 81).

1925 Photo, Renard.

29 boats:—

M 157	M 126	M 110	M 98	M 72
*M 146	M 122	M 109	M 89	*M 66
M 145	M 117	M 107	M 85	M 61
*M 136	M 115	M 104	M 84	*M 60
M 132	M 113	M 102	M 75	M 50
M 129	M 111			

* **NAUTILUS** (ex M 81), * **PELIKAN** (ex M 28).

Built 1916-1920. Displacement: M 157—98, 525 tons; M 89—28, 480 to 500 tons. Dimensions: 182 (*w.l.*), 192 (*o.a.*) $\times 23\frac{1}{2} \times 7$ feet. Guns: 2 M.G. in some. Engines: 2 sets triple expansion. Boilers: 2 water-tube "Schulz." I.H.P. 1800 = 16 kts. 2 screws. Coal: 130 tons.

Notes.—Only a few units are maintained in commission (marked * above.) *Nautilus* and *Pelikan* are rated as Experimental Boats (*Versuchsboote*).

Motor Patrol Vessels (*Bewachungsfahrzeuge*).

8 boats: **UZ 27, 28, 29, 30, 32, 33, 34, 35** (1919-20). 60 tons. Dimensions: $101\frac{1}{2} \times 14\frac{1}{2} \times 3\frac{3}{4}$ feet. H.P. 500 = 14 kts. 2 screws.

HELLENIC NAVY. (GREEK FLEET).

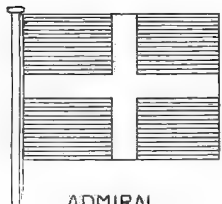
Silhouettes—GREECE

Officially revised by courtesy of the Chief of the Naval General Staff, Athens, 1929.

Special Note.

The services of a British Naval Mission of 5 officers, under Captain G. H. D'O. Lyon, R.N., (with Greek rank of Rear-Admiral) are at present lent to the Hellenic Navy.

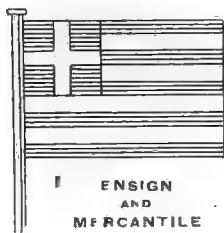
Flags.



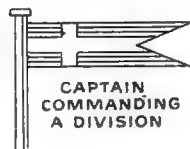
ADMIRAL

Vice-Admiral's flag similar, but has a white ball in upper left canton.

Rear-Admiral's has a white ball in each left canton.



ENSIGN
AND
MERCANTILE



CAPTAIN
COMMANDING
A DIVISION



Sky Blue



White



SENIOR
OFFICER

Personnel:—About 14,000 (conscript, 18 months or enlistment).

Minister of Marine:—Mr. D. Botsaris.

Chief of General Naval Staff:—Rear-Admiral Geo. Panas, C.M.G.

Naval Attaché, London:—Capt. D. Papalexopoulos, C.M.G.

Mercantile Marine:—(1929 official figures), Total Gross Tonnage, 1,215,473.

Uniforms.



- (1) Navarkhos. Admiral.
- (2) Andinavarkhos. Vice-Admiral.
- (3) Yponavarkhos. Rear-Admiral.
- (4) Ploiarkhos. Captain.
- (5) Andiploiarkhos. Commander.
- (6) Ploiarkhis. Lieutenant-Commander.
- (7) Ypoploiarkhos. Lieutenant.
- (8) Anthiploiarkhos. Sub-Lieut.
- (9) Simaophoros. Act. Sub-Lieut.

Other branches without curl:—
Constructors: black velvet.
Engineers: violet velvet.
Paymasters: scarlet velvet.
Surgeons: purple velvet.
Apothecaries: green velvet.
Aviation: light green velvet.
Dockyard: black.

RECOGNITION SILHOUETTES.



AMBRAKIA.



LESBOS.

HIFAISTOS similar, but has been reconstructed.



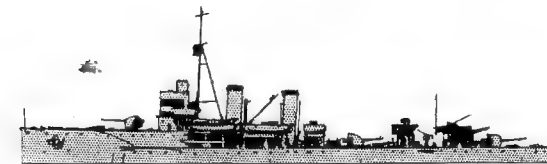
AIGAION.



PINOS.



PROMETHEUS.



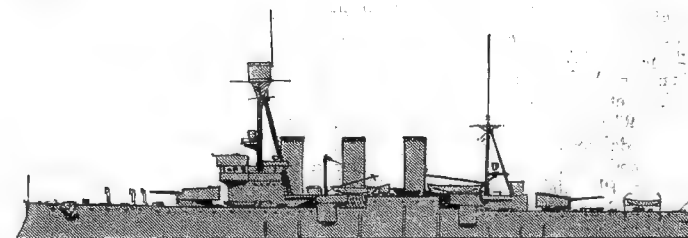
HEILE.



AMPHITRITI.



KILKIS class (2 ships).



GEORGIOS AVEROFF.

GREECE—Silhouettes, Old Battleships, Battle Cruiser.

SILHOUETTES AND BATTLE CRUISER.

RECOGNITION SILHOUETTES—continued.



AETOS class (4).

PERGAMOS class t.b. (6).



SMYRNE.



AIGLI class t.b. (6).

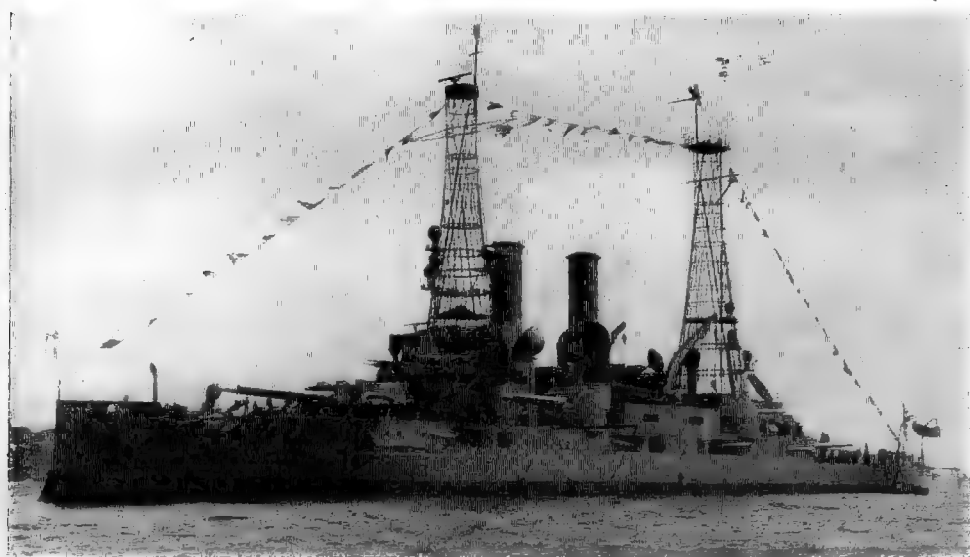


THYELLA class (3).



NIKI class (3).

Old Battleships.



KILKIS.

1922 Photo.

KILKIS (ex *Mississippi*, December, 1905), & **LEMNOS** (ex *Idaho*, September, 1905). Normal displacement, 13,000 tons. Full load displacement, 14,465 tons. Complement, 802. Length (waterline), 375 feet. Beam, 77 feet. Max. load draught, 24½ feet. Length over all, 382 feet. Guns: 4—12 inch, 45 cal., 8—8 inch, 45 cal., 8—7 inch, 45 cal., 12—3 inch, 13 pdr., 4—6 pdr. (saluting), 2—12 pdr. (AA.), 4—1 pdr., 8 M.G. (1 landing). Torpedo tubes (21 inch): 2 submerged. Armour (Midvale): 9" Belt (amidships), 4" Belt (ends), 3" Armour deck, 12"—8" Turrets, 10"—7½" Turret bases (N.C.), 6½"—6" Secondary turrets (N.C.), 7" Lower deck (redoubt), 7" Battery (redoubt), 9" Conning tower. Machinery: 2 sets vertical 4 cylinder triple expansion. 2 screws. Boilers: 8 Babcock. Designed H.P. 10,000—17 kts. (can only make 14 kts. now). Coal: normal, 750 tons; maximum, 1824 tons=6920 miles at 10 kts. Authorized 1903 for U.S. Navy; laid down at Cramp's, Philadelphia, May, 1904, and completed early in 1908. Sold to Greece July 30th, 1914. Both ships refitted and reboilered, 1925-27. *Kilkis* is Gunnery and Navigation School Ship.

Note.—The old battleship *Spetsai* (1889), 4808 tons, still exists as Torpedo School Ship at Salamis, but is only a hulk without armament.

Battle Cruiser.

SALAMIS (Hamburg, Nov., 1914).

Displacement, 19,500 tons.

Length, 570½ feet. Beam, 82 feet. Draught, 25½ feet.

Guns:

8—14 inch, 45 cal.

12—6 inch, 50 cal.

12—12 pdr.

Torpedo tubes:

3—19.7 inch (submerged).

Armour:

9½" Belt amidships

4" Belt (ends)

6" Battery

9½" Barbettes

11½" C.T.

Machinery: Curtis turbines. 3 screws. Designed S.H.P. 40,000 = 23 kts. Fuel: 1200 tons coal + oil.

Note.—The above ship was ordered from the Vulkan Co., of Hamburg, and laid down in July, 1913, but was never completed, owing to the War. The question of responsibility has been in dispute, but as the result of arbitration it is possible Greece may consent to take delivery. Particulars given above represent the original design, which may be altered materially if ship is taken over.

(1907) Armoured Cruiser.**GIORGIOS AVEROFF** (March, 1910).

Normal displacement, { 9,960 tons.
10,118 metric tons.

Complement, 670.

Length (over all), 462 feet. Beam, 69 feet.

Maximum draught, 24½ feet.

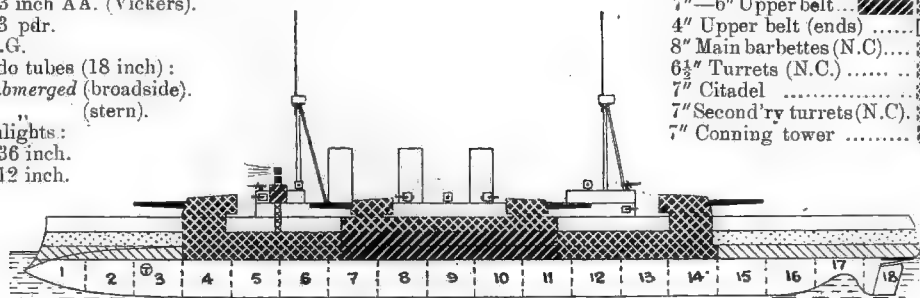
Length (p.p.), 426 feet.



1927 Photo, by courtesy of F. et C. de la Méditerranée.

Guns (Armstrong):
4—9·2 inch, 45 cal. (Dir. Con.)
8—7·5 inch, 45 cal.
16—14 pdr.
2—3 inch AA. (Vickers).
4—3 pdr.
2 M.G.
Torpedo tubes (18 inch):
2 submerged (broadside).
1 " (stern).
Searchlights:
5—36 inch.
2—12 inch.

Armour (Terni):
8" Belt (amidships)
3½" Belt (ends)
2" Deck
7"—6" Upper belt
4" Upper belt (ends)
8" Main barbettes (N.C.)
6½" Turrets (N.C.)
7" Citadel
7" Second'ry turrets (N.C.)
7" Conning tower



Ahead:
2—9·2 in.
4—7·5 in.

Astern:
2—9·2 in.
4—7·5 in.

Broadside: 4—9·2 in., 4—7·5 in.

(For Machinery and Notes see next column.)

Machinery: 2 sets 4 cylinder triple expansion. 2 screws. Boilers: 22 Belleville. Designed H.P. 19,000=22·5 kts. Trials: 21,500=23·9. Coal: normal 660 tons; maximum 1500 tons=712½ miles at 10 kts.; 2489 miles at 17½ kts. Built by Orlando.

Gunnery Notes.—All big guns hydraulically controlled. 2—12 pdr. AA. guns mounted on after superstructure.
General Notes.—Cost £950,750. Sister to Italian *Pisa*. Reboilered and completely refitted by Forges et Ch. de la Méditerranée, at La Seyne 1925-27, the alterations effected including the installation of new heavy type tripod foremast with director tower, additional rangefinders and searchlights, AA. guns, new boats, etc.

Cruiser Minelayer.

HELLE.

1929 Photo, Lieut. R. H. S. Rodger, R.N.

HELLE (ex-Chinese *Fei Hung*, May, 1912).

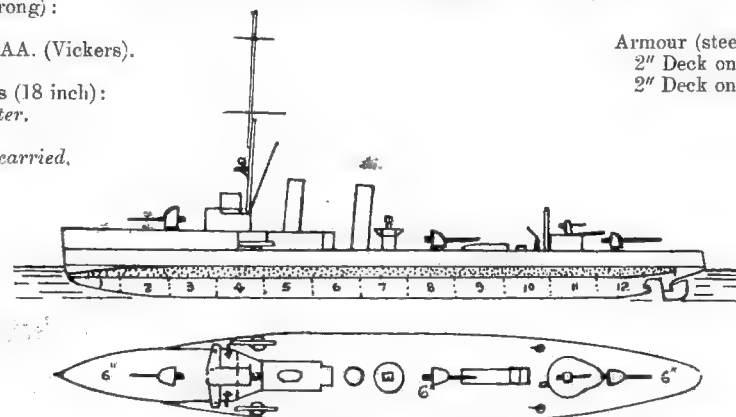
Normal displacement, 2600 tons. Complement, 232.

Length (over all), 322 feet. Beam, 39 feet. Draught, 14 feet.

Guns (Armstrong):
3—6 inch.
2—3 inch. AA. (Vickers).
4—6 pdr.
Torpedo tubes (18 inch):
2 above water.

Armour (steel):
2" Deck on slopes ...
2" Deck on flat.....

110 Mines carried.



Machinery: 3 Parsons geared turbines. 3 screws. Boilers: 3 Yarrow. Designed H.P. 7500 = 20·5 kts. Oil: normal 600 tons = 7000 miles at 10 kts.

Name	Builder	Machinery	Laid down	Completed	Trials:		Boilers	Best recent speed
					4 hours.	Full Power.		
Helle	N.Y. Shipbldg.	N.Y. Shipbldg.	1910	Nov., '13	7500=20·3	8650=21	Yarrow	

General Notes.—Built as the *Fei-Hung* for China. Purchased 1914. Originally fitted with Thornycroft boilers, mixed coal and oil burning. Now converted to oil fuel only. Original turbines have also been replaced, and vessel equipped for mine-laying, 1926-28. This cruiser has been completely transformed by the reduction of her armament, 4 broadside guns being removed and main battery arranged on centre-line, as well as by the removal of the old poop and other heavy weights. The whole of this work was carried out by the F. & Ch. de la Méditerranée, La Seyne. On fresh trials original speed was exceeded.

GREECE--Torpedo Craft.

TORPEDO CRAFT.

11 + 2 building = 13 Flotilla Leaders and Destroyers.

No.	Type	Date	Dis- place- ment tons	H.P.	Max. speed kts.	Fuel	Com- ple- ment	T. tubes	Max. draught
2	Leaders (O)	Bldg.	1450	(t)	39.5	For 4500 at 20 kts.		6	10 $\frac{3}{4}$
4	Aetos (L)	'10-'12	980	19,750	32	For 3000 at 15 kts.	102	6	10
3	Thyella (Y)	'06-'07	390	6700	30	From 1140 to 1250 miles at 15 kts.	70	2	9
3	Niki (V)	'05-'07	350	6600	30.5†				
1	Smyrne (Y)	1907	400	6000	30	For 1200 at 15 kts.	75	2	9

(O)=Odero. (L)=Cammell Laird. (V)=Vulkan Co. (Y)=Yarrow. (t)=Turbines.
† Present best speed for class, 26 kts.

New Construction.

2 Flotilla Leaders ordered from Odero, October, 1929. Displacement: 1350 tons *normal*, 1450 tons *deep load*. Dimensions: 303 × 30 $\frac{1}{2}$ × 10 $\frac{1}{2}$ feet. Armament: 4—4.7 inch, 3—40 m/m AA., 6—20.8 inch tubes. 2 sets Parsons geared turbines. 3 Express type boilers. S.H.P. 50,000 = 39.5 kts. To be delivered in June and August, 1931, respectively. Of same general type as Italian *Dardo* class. Cost about \$250,000 each.

4 Aetos Class.



Aetos type.



LEON.

1925 Photo, by courtesy of the Ministry of Marine.

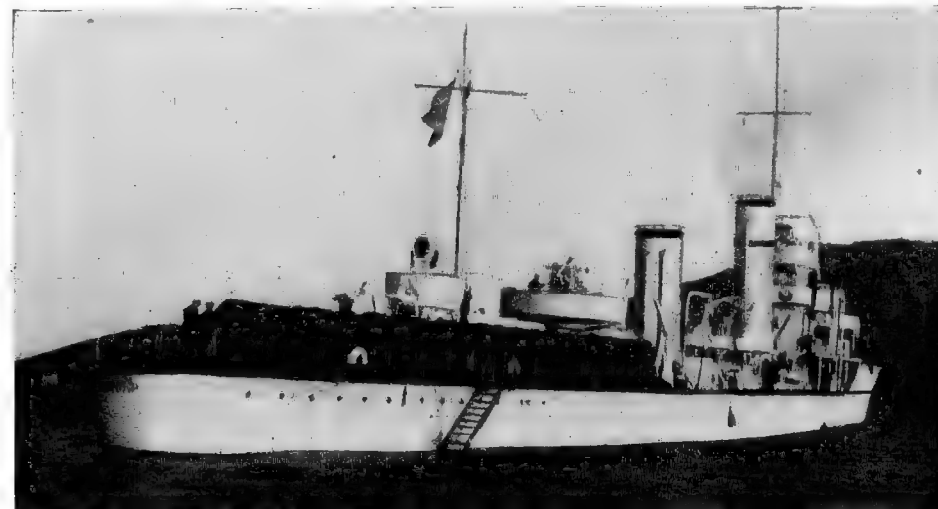
4 Cammell-Laird type: **Aetos, Ierax, Leon, Panther** (all launched 1911). 980 tons *normal*, 1300 *full load*. Dimensions: 293 × 27 $\frac{1}{2}$ × 8 $\frac{1}{2}$ feet, *normal draught*; *full load draught*, 10 feet. Armament: 4—4 inch Bethlehem (DIR. CON.), 1—3 inch AA. Tubes: 6—21 inch, in triple deck mountings. 3 searchlights. S.H.P. 19,750 = 32 kts. Combined Parsons and Curtis turbines. 4 Yarrow boilers. Oil: 260 tons. These were 4 boats, *San Luis, Santa Fe, Tucuman* and *Santiago*, built for Argentina. Purchased by Greece, Oct., 1912. Reconstructed and re-boilered by Messrs. J. S. White & Co., Ltd., E. Cowes, 1924-25.

General Notes.—The refit of these destroyers has proved a great success, the original speed being excelled by 2 kts. From obsolescent craft they have been transformed into efficient and up-to-date destroyers little inferior on paper to the British "W" type. *Aetos* and *Panther* are fitted for mine-laying, and carry 40 mines each.



IERAX.

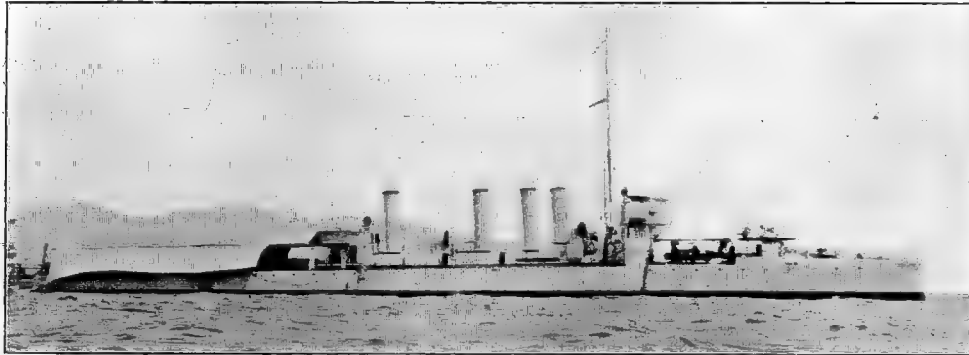
Photo added 1927 by courtesy of Messrs. J. S. White & Co., Ltd.



PANTHER. Equipped as a minelayer.

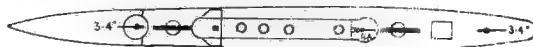
1927 Official Photo.

1 ex-Austrian Boat.

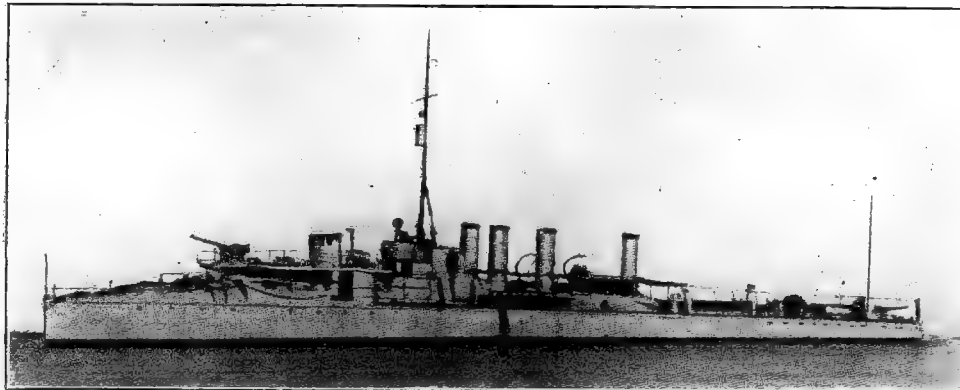


1924 Photo, Paym. Lieut. H. C. Lockyer, R.N.

Smyrne (ex-Austrian *Ulan*, Stab. Tec., Trieste, 1907). Yarrow type. 400 tons. Dimensions: $220\frac{1}{2} \times 20\frac{1}{2} \times 6$ feet (mean) draught. Armament: 2—3.4 inch Krupp, 1—2.7 inch Skoda A.A. 2—21 inch tubes. Designed H.P. 6000 = 30 kts. (can still average 29 kts.). 4 Yarrow boilers. Coal: 90 tons.



3 Thyella Class.

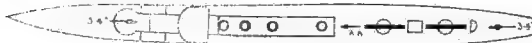


THYELLA

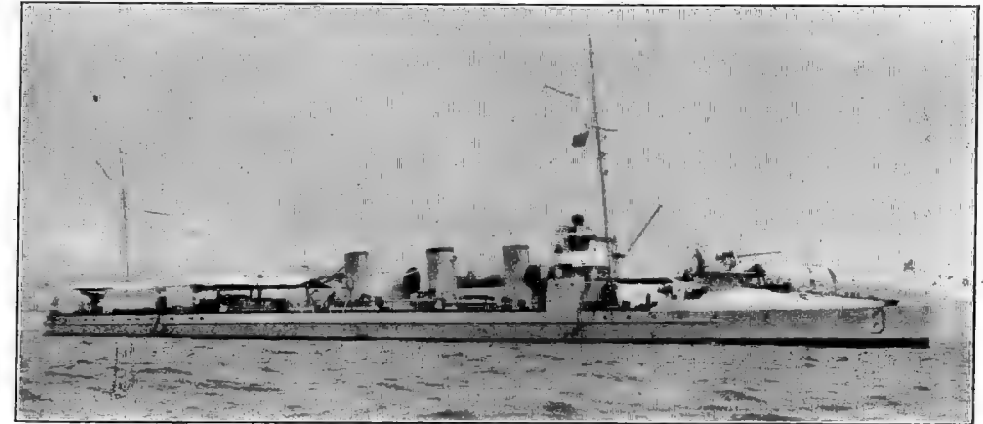
1922, Official Photo.

3 Yarrow type: **Thyella**, **Sphendoni** and **Lonkhi** (1906-07). 390 tons. Dimensions: $220\frac{1}{2} \times 20\frac{1}{2} \times 6$ feet, mean draught; max. draught, 9 feet. Armament: 2—3.4 inch Krupp, 1—2.7 inch A.A. 2 tubes (18 inch). Speed: 30 kts. Coal: 80 tons. Endurance: 1140 to 1250 miles at 15 kts. Complement, 70.

Notes.—*Lonkhi* completely refitted, 1925-26, and has since reached her original speed of 30 kts. *Narkratousa*, of this class, lost in 1921.



3 Niki Class.



VELOS.

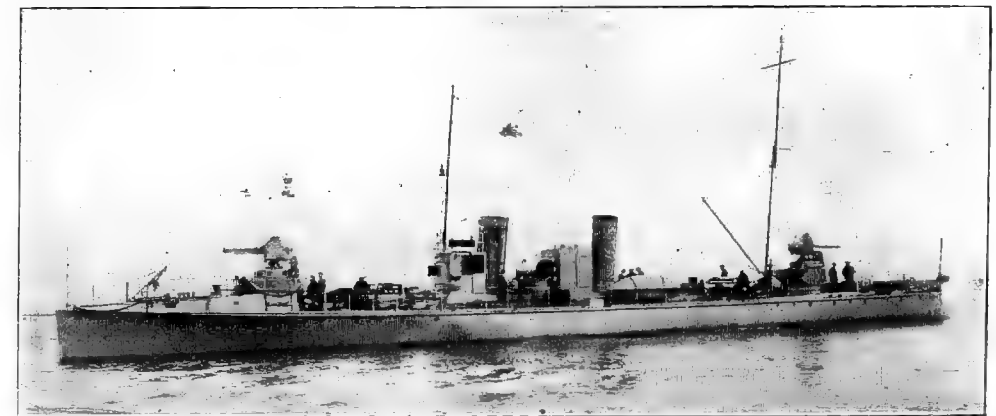
1924 Photo, Paym. Lieut. H. C. Lockyer, R.N.

3 Vulkan Stettin type: **Aspis** (1906), **Niki** (1905), and **Velos** (1906). 350 tons. Dimensions: $220\frac{1}{2} \times 20\frac{1}{2} \times 6$ feet, mean draught; max. draught, 9 feet. H.P. 6700 = 30 kts. Armament: 2—12 pdr., 4—6 pdr. 2 tubes (21 inch). Coal: 90 tons. Complement, 70. Endurance: 1140 to 1250 miles at 15 kts. *Dora* of this class, lost during the War.

Note.—All three underwent a thorough refit, 1926.



11 Torpedo and Patrol Boats.

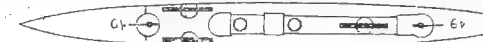


AIGLI.

1924 Official Photo.

6 Vulkan type: **Aigli**, **Alkyone**, **Arethousa**, **Dafni**, **Doris**, **Thetis** (all launched 1913). 120 tons. Dimensions: $147\frac{1}{2} \times 9\frac{1}{2} \times 4$ feet. Armament: 2—6 pdr. Bethlehem, 3—18 inch tubes. I.H.P. 2090 = 25 kts. (about 24 kts. best speed now). Trials: *Aigli* 26.2, *Doris* 25.7. Coal: 60 tons.

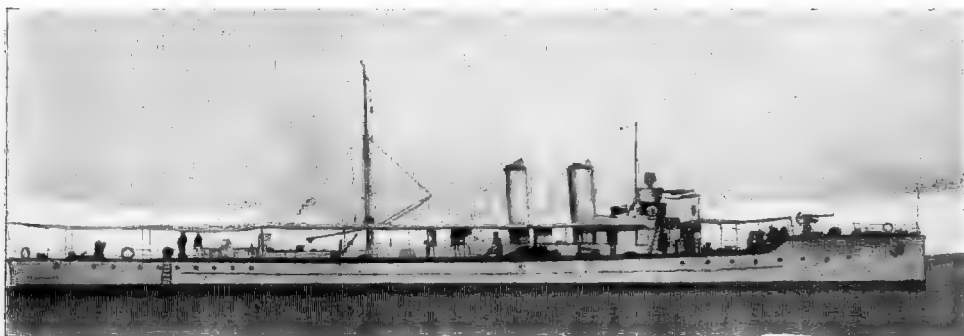
Note.—These six boats were completely refitted, 1926.



GREECE—Torpedo Craft and Submarines.

TORPEDO CRAFT AND SUBMARINES.

Patrol Vessels (ex-Torpedo Boats).

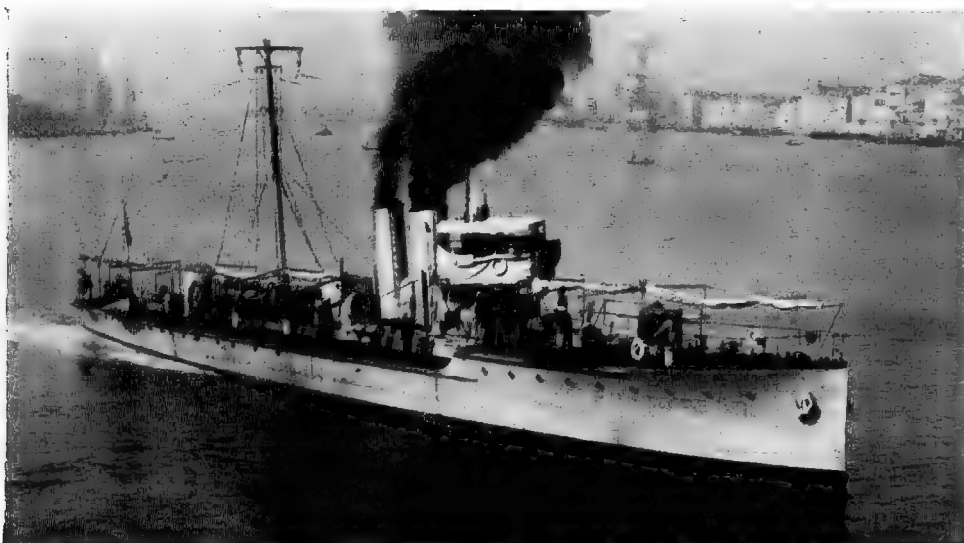


PERGAMOS.

1922 Official Photo.

2 *Ex-Austrian* boats: **Pergamos** (ex-95 *F*), **Prousa** (ex-92 *F*). Built by Ganz-Panubius Yard, Fiume (1914-1915). 250 tons. Dimensions: $188\frac{1}{2} \times 19 \times 8$ feet *max.* draught. H.P. 5000 = 28 kts. 2 turbines. 2 Yarrow boilers (1 coal and 1 oil). Fuel: 21 tons coal + 31 tons oil. Guns: 1—11 pdr. Skoda (*Pergamos* has 2). No torpedoes carried. Complement, 25.

Note.—These boats underwent a general refit at Piraeus, 1926. A third vessel of this type *Panormos*, was wrecked at Aegina, March 11th, 1928.



KYZIKOS.

1922 Official Photo.

3 *Ex-Austrian* boats: **Kyzikos** (ex-98 *M*), **Kios** (ex-99 *M*), **Kidonía** (ex-100 *M*). Built at Monfalcone (1914). 250 tons. Dimensions: $197 \times 18 \times 8$ feet *max.* draught. Other details as *Pergamos* type, above.

Note.—All three boats underwent a general refit at Piraeus, 1926.

6 Submarines.

No. in Class	Class Type (Design)	Date	Displacement	H.P.	Speed	Endurance	Tubes	Complement
			Surface Submerged	Surface Submerged	Surface Submerged	Surface Submerged		
4	<i>Glavkos</i> (S)	'25-'29	730 930	1420 1200	14 9.5	1500/4000 miles at 10 kts. 100 miles at 5 kts.	8	41
2	<i>Katsonis</i> (L)	'24-'29	605 775	1300 1000	14 9.5	1500/3500 miles at 10 kts. 100 miles at 5 kts.	6	39

L = Schneider-Laubeuf. S = Simonot.

4 Glavkos Class.

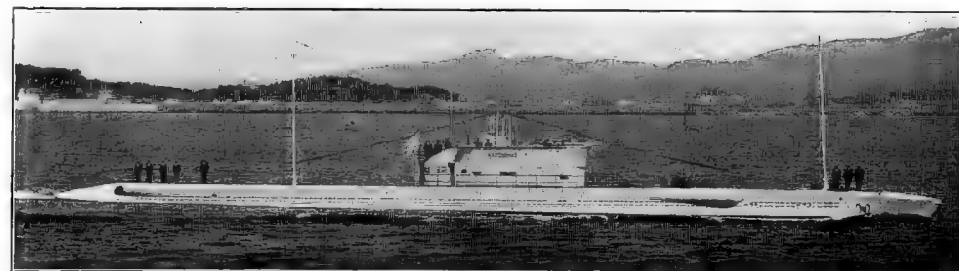


GLAVKOS.

1929 Photo by favour of M. Henri Le Masson.

4 *Simonot* type. **Nereus** (Dec., 1927), **Proteus** (Oct. 24th, 1927), **Triton** (April 4th, 1928), all built by At. & Ch. de la Loire, at Nantes. **Glavkos** (1928), by Chantiers Navals Français, at Blainville. Displacement: 730/930 tons (metric). Dimensions: $225 (p.p.) \times 18.8 \times 13.7$ feet. Machinery (supplied by At. & Ch. de la Loire): On surface, 2 sets 2-cycle Sulzer Diesels, totalling 1420 B.H.P. for 14 kts.; submerged 1200 B.H.P. for 9½ kts. Endurance on surface: normal 1500 miles, maximum 4000 miles; both at 10 kts. When submerged, 100 miles at 5 kts. Armament: 1—4 inch, 1—3 pdr. A.A., 6—21 inch internal bow tubes, 2—21 inch internal stern tubes. Stowage for 8 torpedoes, 150 rounds of 4 inch ammunition. Complement, 41. Maximum depth of submergence: 40 fathoms. Approximate cost £115,000 each.

2 Katsonis Class.



KATSONIS.

1929 Photo, M. Bar, Toulon.

2 *Schneider-Laubeuf* type. **Katsonis** (20 March, 1926), by Ch. de la Gironde, at Bordeaux; **Papamicolis** (Nov. 1926), by At. & Ch. de la Loire, at Nantes. Displacement: 605/775 tons (metric). Dimensions: $204\frac{1}{2} \times (p.p.) 17\frac{1}{2} \times 11$ feet. On surface, 2 sets of 2-cycle Machinery: Schneider-Carel Diesels, totalling 1300 B.H.P. for 14 kts. Submerged, 1090 B.H.P. for 9½ kts. Endurance, on surface: normal 1500 miles, maximum 3500 miles, both at 10 kts; when submerged, 100 miles at 5 kts. Armament: 1—4 inch, 1—3 pdr. A.A., 2—21 inch internal bow tubes, 2—21 inch external stern tubes. Stowage for 7 torpedoes, 100 rounds of 4 inch ammunition. Complement, 39. Maximum depth of submergence: 40 fathoms. First boat delivered at Piraeus, Dec. 29th, 1927.

MISCELLANEOUS.

Mine Layers.

Note.—In peace time these vessels are employed as follows: *Pleias* as a Lighthouse Tender, the other three as "Communication Boats" (Despatch Vessels).



PLEIAS.

1927 Official Photo.

PLEIAS (Soc. Italiana Ernesto Breda, Nostre Yard, Venice, 28th April, 1926). Displacement: 520 tons. Dimensions: 162 × 27 × 12½ feet. I.H.P. 1000 = 14 kts. Coal: 90 tons. Carries 50 mines.

Photo wanted.

PARALOS (Rotterdam, 1925). Displacement: 395 tons. Dimensions: 150 × 22 × 10½ feet. I.H.P. 550 = 13 kts. Coal: 35 tons. Carries 52 mines.

Mine Layers—continued.

Photo wanted.

KORGIALENIOS (Rotterdam, 1916). Displacement: 380 tons. Dimensions: 150 × 21½ × 10 feet (depth). I.H.P. 550 = 13½ kts. Coal: 35 tons. Carries 50 mines.

Photo wanted.

TENEDOS (Glasgow, 1906). Displacement: 460 tons. Dimensions: 142 × 24 × 10 feet (mean draught). I.H.P. 560 = 13 kts. Coal: 40 tons. Carries 40 mines.

Old Gunboats.

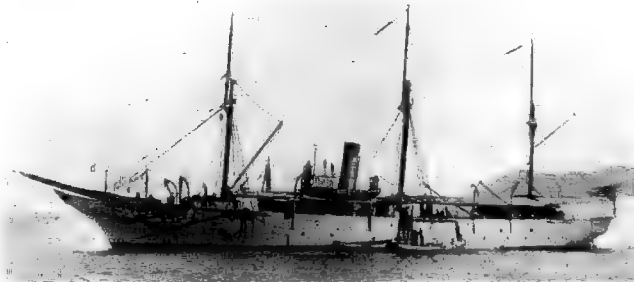


Photo added 1923.

PINIOS (Dumbarton, 1884, Rebuilt 1895-7). 404 tons. Dimensions: 131½ (p.p.) × 24½ × 11 feet. Guns: 2—3 inch Krupp. H.P. 400 = 11 kts. (8 kts. best speed now). Coal: 55 tons. Complement, 60. Now serves as Lighthouse Tender.

Miscellaneous—GREECE

Old Gunboats—continued.



KISSA.

1922 Official Photo.

KISSA, KICHLE (Blackwall, 1884). 86 tons. Dimensions: 76 × 16 × 7 feet. I.H.P. 162 = 10 kts. Coal: 20 tons. Guns: Nil. (*Kissa* now used as a Lighthouse Tender). Sister ship *Aedon* wrecked, 1924.



1922 Official Photo.

(Serves as Tender to Gunnery School.)

AMBRAKIA (Blackwall, 1881, re-built 1910 and 1921). 469 tons. Dimensions: 128 (p.p.) × 26½ × 7½ feet. Guns: 1—6 inch (Vickers), 1—4 inch (Bethlehem), 1—3½ inch (Krupp), 1—3 inch AA. (Vickers), 1—14 pdr. (U.S. Navy), 1 searchlight. H.P. 640 = 11 kts. Coal: 60 tons.

GREECE—Miscellaneous.

Oil Tanker.

PROMETHEUS (Newcastle, 1889.) 3193 tons, *gross* tonnage. Dimensions: $318\frac{1}{2} \times 42 \times 29\frac{1}{2}$ feet depth. I.H.P. 1150 = 10 kts. Carries 4175 tons of oil fuel.

Fleet Colliers.



1922 Official Photo,

AIGAION (ex-German Cargo Ship *Hagen*, Flensburg, 1906). 4210 tons. Dimensions: $388 \times 51 \times 25$ feet. I.H.P., 2800=10.5 kts. Guns: 1—4 inch (Bethlehem), 1—3.5 inch (Krupp), 2 M.G., 2 AA. Converted 1922.



1922 Official Photo.

LESBOS (ex-German Cargo ship *Asgard*, Newcastle, 1906.) 4181 *gross* tonnage. Dimensions: $360\frac{1}{2} \times 48 \times 20$ feet. I.H.P. 2100 = 10 kts.

MISCELLANEOUS.

Fleet Repair and Supply Ship.



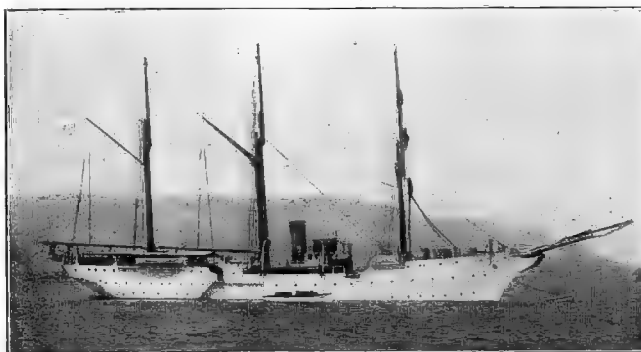
1922 Official Photo.

HIFAISTOS (ex-*Khios*) (ex-German Cargo Ship *Marie Reppel*, Rostock, 1920). *Gross* tonnage, 4549. Dimensions: $360\frac{1}{2} \times 50 \times 23$ feet. I.H.P. 2500 = $11\frac{1}{2}$ kts. Guns: 4—4 inch AA. Converted into a Repair Ship by Messrs. Palmers, Jarrow-on-Tyne, 1925. Fitted with up-to-date workshops and plant.

Water Carrier.

AVRA (Greenock, 1894, reconstructed, 1918). Displacement, 1221 tons. Dimensions: $210 \times 29 \times 14$ feet. I.H.P. 695 = 12 kts. Coal: 110 tons. Water capacity: 750 tons.

Training Ship.

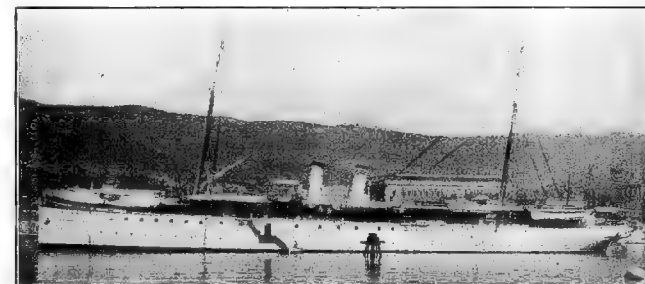


1928 Photo, *Marius Bar*.

ARES (Forges et Chantiers de la Méditerranée, La Seyne, Jan. 28th, 1927). Steel Barquentine. Displacement: 1870 tons. Dimensions: $208 (p.p.) \times 39\frac{1}{2} \times 13\frac{1}{2}$ feet. Guns; 4—3 inch Auxiliary steam engine (reciprocating) I.H.P. 1000 = 10 kts. 2 oil-fired Babcock & Wilcox boilers. Fitted with lecture rooms, workshops and accommodation for 100 Naval Cadets and 150 Boys. Total complement: 419. Carries an exceptionally full equipment of boats for training purposes.

Note.—On trials, H.P. 1144=11.38 kts.

Hospital Ship.



AMPHITRITI (Birkenhead, 1876.) 1172 tons displacement. Dimensions: $206 \times 30\frac{1}{2} \times 16\frac{1}{2}$ feet depth. I.H.P. 1630 = $13\frac{1}{2}$ kts. Coal: 160 tons. Originally built as troopship. Rebuilt 1885 as Royal Yacht. Converted 1918 as Naval Hospital Ship.

Mine Sweeping Trawlers.

Y1, Y2 (Leith, 1910). Displacement 140 tons. Dimensions: $85 \times 18 \times 6\frac{1}{2}$ feet draught. I.H.P. 200 = 10 kts. Guns: 1—12 pdr. Krupp, 1 M.G. Purchased from British Admiralty, 1918.

M. L. (Motor Launches).

B1, B3. British Admiralty type. Built, 1916. Displacement 37 tons. Dimensions: $80 \times 12 \times 3\frac{3}{4}$ feet draught. Guns: 1—6 pdr. 4 depth charges. B.H.P. 440 = 19 kts. Machinery: 2 sets of standard petrol motors. Petrol: about 1850 gallons. Complement, 9.

C.M.B. (Used as Vedette Boats).

Two Thornycroft 55 ft. type (1929). Two motors each 375 H.P.=37 kts. (40 kts. reached on trials.) 2 Lewis guns, 2—18 inch torpedoes, 4 D.C.

One of Thornycroft 45 ft. type (1921). Y 12 type motor of 350 B.H.P. = 38 kts. No armament. Complement, 3.

HUNGARY.

River Gunboats—HUNGARY

(Danube Flotilla).

Flag.—Ensign is rectangular, divided horizontally into three equal parts of red, white and green, with the national arms slightly to the left of the centre.

Principal Base.—Budapest.

Under Law XIV of 1922, the Royal Hungarian Riverguard (M. Kir. Folyamorseg) was established for police purposes on the Danube.

The maintenance of the following craft is permitted :—

- 8 Patrol Vessels of 128 tons each *maximum*, armed with 2—70 m/m. and 2 M.G.
- 2 Motor Launches, of 20 to 30 tons each, armed with 1—47 m/m. and 1 M.G.
- 10 Motor Boats, of 12 to 20 tons each, armed with 1 M.G.

The total strength of personnel must not exceed 96 officers and 1524 petty officers and men. The Royal Hungarian Riverguard is under the control of the Ministry of the Interior.

Colour of Ships: Khaki, and Green below waterline.

Mercantile Marine (1925).—7 ships, of 31,790 tons gross.

Insignia of Rank.



Vezérkapitány. (Rear-Admiral.) Főkapitány. (Captain, senior.) 1. Törzskapitány. (Captain, junior.) 2. Törzskapitány. (Commander.) Kapitány. (Lieut. Commander.)



Főhajónagy. (Lieut.) Hajónagy. (Sub-Lieut.) Gyakornok. (Midshipman.)

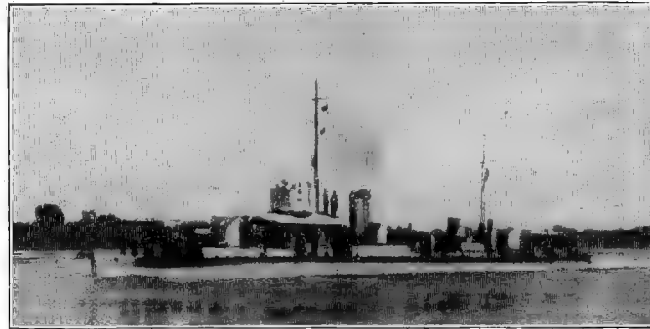
Without curl, and with colour between stripes :—

- Surgeons:** Black velvet.
- Engineers:** Cherry-coloured cloth.
- Constructors:** Cherry-coloured velvet.
- Paymasters:** Green cloth.
- Judge Advocates:** Red cloth.
- Musical Directors:** Violet cloth.

Uniform Cap.—Same shape as the former Austro-Hungarian cap. Badge is a golden anchor surrounded by a laurel wreath and surmounted by the Holy Crown of Hungary.

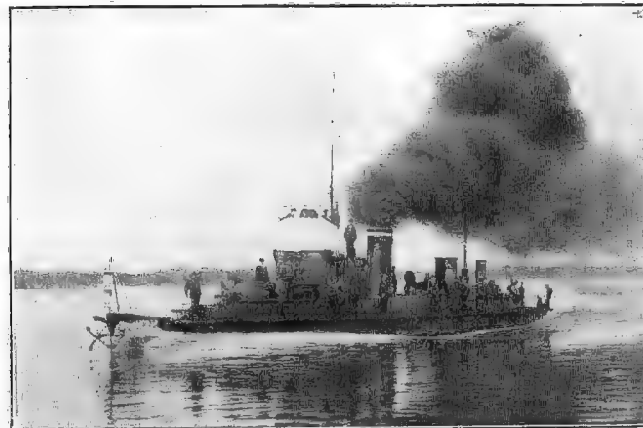
4 River Patrol Boats.

(Ex Austro-Hungarian.)

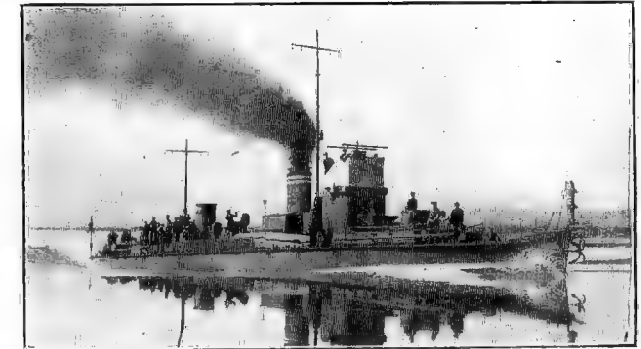


DEBRECEN. (Masts now of equal height). 1925 Official Photo.

DEBRECEN (ex-Komaron, ex-Austro-Hungarian *Lachs*) (Ganz-Danubius Yard, Budapest, 1918). Displacement: 140 tons. Dimensions: $149\frac{1}{2} \times 19\frac{1}{2} \times 3\frac{1}{2}$ feet *mean* draught. H.P. 1400 = 15 kts. A.E.G. turbines. 2 Yarrow boilers. Tunnel screws. Guns: 2—3 inch, 2 M.G. 1 S.L. Oil fuel: 18 tons. Complement, 44. Refitted 1924.

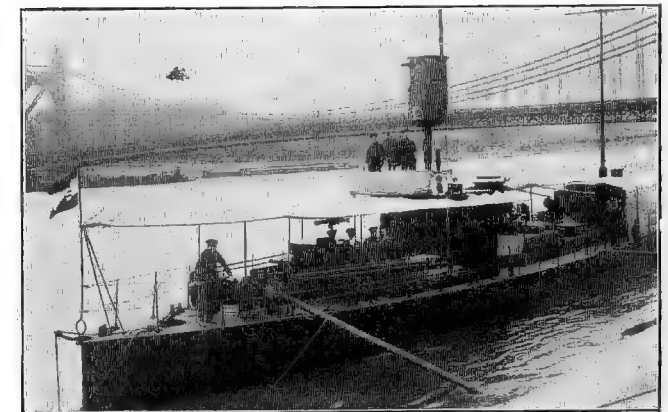


SZEGED. (Masts now of equal height). 1925 Official Photo.



KECSKEMÉT. (Masts now of equal height). 1925 Official Photo. SZEGED (ex-Bregainica, ex-Austro-Hungarian *Wels*, 1915).

KECSKEMÉT (ex-Austro-Hungarian *Viza*, 1916). Both built at Ganz-Danubius Yard, Budapest. Displacement: 133 tons. Dimensions: $144\frac{1}{2} \times 16\frac{1}{2} \times 3\frac{1}{2}$ feet *mean* draught. H.P. 1100 = 15 kts. A.E.G. turbines. 2 Yarrow boilers. Tunnel screws. Guns: 4—3 inch, 2 M.G. 1 S.L. Oil fuel: 18 tons. Complement, 44. *Szeged* refitted 1921, *Kecskemet* 1923.



1926 Photo, Baron Heribert Thierry. **SIÓFOK** (ex-Austro-Hungarian *Csuka*) (D.D.S.G. Werft, Budapest, 1915). Displacement: 60 tons. Dimensions: $118 \times 15 \times 2\frac{3}{4}$ feet *mean* draught. H.P. 800 = 14.5 kts. Guns: 1—3 inch, 2 M.G. Complement, 28.

In addition to the above, there are a number of small Motor Launches and Guard Boats.

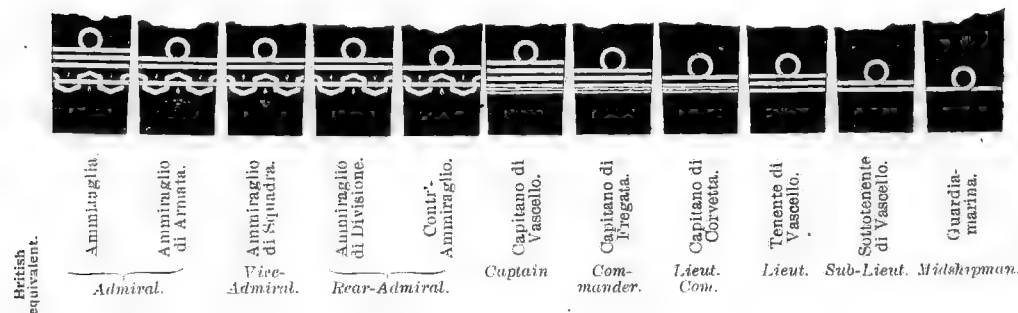
(ROYAL) ITALIAN NAVY.

Officially corrected by courtesy of the Ministry of Marine, 1929.

Uniforms.

(Note.—A five pointed silver star is worn on lapel of coat.)

INSIGNIA OF RANK ON SLEEVES.



The ranks of Grande Ammiraglio (four stripes) and of Ammiraglio (three stripes) can only be conferred for special merit on flag officers who have commanded fleets in time of war. The rank of Ammiraglio has now been abolished, except "ad personam" to the Royal Princes.

Lesser ranks are: Aspirante; Allievo dell' Accademia Navale (*Naval Cadet*).

Other branches distinguished by following Colours: Armi Navali (*Ordnance Constructors*), white; Genio Navale (*Naval Constructors and Engineers*), dark purple; Sanitario (*Doctors*), blue; Commissariato (*Paymasters*), red.

Note.—All officers under arms on duty wear a blue sash over right shoulder, ending in a blue knot at left hip; worn with belt. Officers on staff duty wear it on opposite shoulder, and without belt. Tropical white tunic has insignia of rank on shoulder straps, with stars as stripes. Senior lieutenants wear a piece of gold under the stars of shoulder strap.

Navy Estimates: 1927-28, Lit. 1,218,970,630; 1928-29, Lit. 1,232,000,000.

Total Personnel: 45,000.

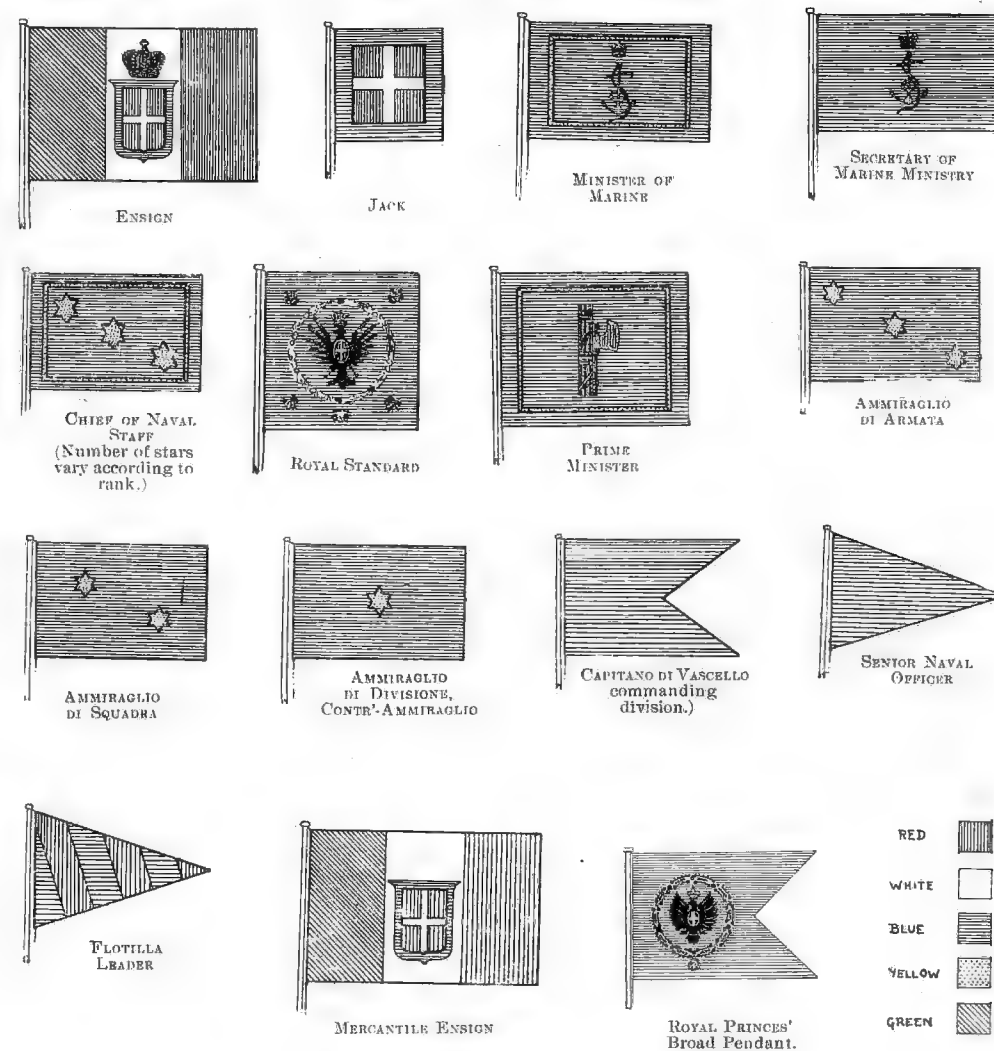
Minister of Marine: His Excellency Cavaliere Benito Mussolini.

Secretary of Marine Ministry: Ammiraglio di Divisione Giuseppe Sirianni.

Chief of Naval Staff: Ammiraglio di Divisione Ernesto Burzagli.

Naval Attaché, London: Capitano di Vascello Conte Ettore Sommati di Mombello.

Flags.



Mercantile Marine.

From "Lloyd's Register" 1929 figures.
Total Gross Tonnage, 3,284,660.

Future Shipbuilding Programme.

"Fighting Ships" is officially informed that the Building Programme for 1929-30 will include:

2 Cruisers of 10,000 tons (*Bolzano* and *Gorizia*); 2 Cruisers of 5250 tons (*Maresciallo Cadorna* and *Maresciallo Diaz*); 4 Destroyers (*Dardo* class) of 1450 tons; and 5 Coastal Submarines of 500 tons surface displacement. (All ordered June, 1929.)

OFFICIAL TABLE OF NAVAL ORDNANCE.

Official Designation:— Calibre mm length cal. Mark A=Armstrong, V=Vickers An=Ansaldo, S=Schneider. Date of introduction.		305/46	254/45	254/45	203/50	190/45	152/53	152/50	152/45	120/50	120/50	120/45	102/45	100/47	102/35	76/50	76/45	76/17
		A., V.	A.	V.	S.-An.	A., V.	An.	A.	S.	An.	A., V.	A.	S.-A.	R.M.	S.	A., V.	S.	S.
		1909	1907	1906	1924	1908-1906	1927	1918	1911	1926.	1909	1913-18	1917	1928	1914-15	1909	1911	1912
Designation by Calibre, c/m. ..		30.479	25.4	25.4	20.3	19.05	15.24	15.24	15.24	12	12	12	10.2	10.0	10.2	7.62	7.62	7.62
Calibre, in inches		12	10	10	8	7.5	6	6	6	4.75	4.75	4.75	4	3.9	4	3	3	3
Lengths	Total, in feet	47.77	39.07	38.715	34.593	29.22	25.39	25.94	23.42	19.57	20.38	18.38	15.715	15.721	12.247	13.271	11.722	4.593
	Rifled Bore, in inches	477.9	358.4	370.5	—	281.7	—	256.6	219.2	—	204.64	174.64	150.74	12.365	114.29	126	107.2	14.88
	Powder Chamber, in inches ..	97.7	74.91	74.91	—	51.65	—	44.6	44.6	—	28.64	35.03	27.16	3.112	23.50	22	25.4	—
	Bore, in calibres	37.3	35.84	37.05	—	37.5	—	42.77	36.54	—	43.31	36.96	37.53	15.371	28.46	42	35.73	14.96
No. of Grooves		72	60	70	52	44	44	36	56	36	36	36	40	26	32	28	28	24
Twist of Rifling, in calibres ..		30	30	00-30	30	00-30	30	33	36	30	30	30	—	30	—	30	35.9	22
Total Weight, in tons		62.99	34.49	35.339	20.800	14.478	7.700	8.100	7.025	3.00	3.662	4.035	2.327	2.020	1.200	1.122	0.698	0.104
Firing Charge	Armour-piercing projectile lb.	346	185	185	103.19	70.987	43	—	—	19	—	—	—	—	—	—	—	—
	Common Shell H.E., lb. ..	279.9	185	185	—	70.987	—	32.79	30.64	—	14.66	9.589	9.479	10.319	6.50	3.02	3.571	0.529
Weight	Armour-piercing projectile, lb.	997.2	494	494	269	200.39	103.5	—	—	50.5	—	—	—	—	—	—	—	—
	Shell H.E., lb.	884.4	489.8	489.8	—	498.5	—	110.22	103.61	—	48.74	48.74	30.31	30.318	30.31	14.05	14.05	11.68
	Shrapnel, lb.	—	—	—	—	—	—	—	—	—	55.33	55.33	33.28	—	33.28	15.08	15.08	11.68
	Armour-piercing projectile, lb.	16.63	4.37	4.37	—	2.332	—	—	—	—	—	—	—	—	—	—	—	—
Bursting Charge	Shell H.E., lb.	53.13	29.86	29.86	—	11.706	—	5.996	7.528	—	2.711	2.711	2.866	—	2.866	1.102	1.102	0.782
	Shrapnel, lbs.	—	—	—	—	—	—	—	—	—	0.65	0.65	0.474	—	0.474	0.236	0.236	0.165
Muzzle Velocity, in ft.secs. ..		2755.9	2788.77	2788.77	2743.20	2788.77	2785	2854	2723	2786	2788	2460	2788	2438.40	2460	2460	2460	1230
Muzzle Energy—Total tons per sq. inch ..		18.63	17.71	17.71	—	17.98	—	18.37	16.86	—	18.37	15.75	18.37	—	18.37	18.37	15.75	12.47

Note.—German 5.9 in. and 4.1 in.; Austrian 3.9 in., retained in ex-enemy I.C., and T.B.D's. An old Armstrong 10 in., 40 cal., is still mounted in training cruiser *F. Ferruccio*.

- 12" 46 cal. *Duilio* class (2 ships), *Cesare* class (2 ships).
 10" 45 " *S. Marco* class (2 ships) and *Pisa*
 8" 50 " *Trento* class
 8" 45 " *F. Ferruccio*.
 7.5" 45 " *San Marco* class (2), and *Pisa*.
 6" 45 " *Duilio* class (2 ships).
 4.7" 50 " *Cesare* class (2 ships), *Quarto*, and *Libia*.
 3.9" 47 " *Trento* class.

Note.—Above list of guns mounted in various classes is unofficial.

Directors, Rangefinders, &c.

Supplied by the Galileo and S. Giorgio Companies, of Florence and Genoa, respectively.

Hydrophones.

Special schools for Training ratings in use of above apparatus have been instituted.

Torpedoes, Mines, D.C., Air Bombs, &c.

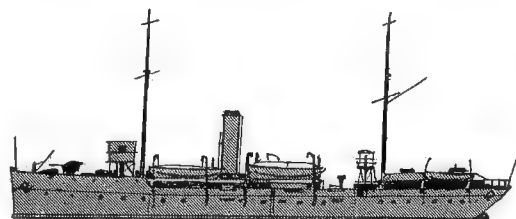
No reliable details available. Torpedoes manufactured by State Arsenal, Società Italiana, Whitehead & Co., Fiume, and Silurificio Italiano, Naples. Latter have recently perfected a new type, with warhead carrying 550 lbs. of explosives, which is officially stated to be of remarkably high speed. Tubes are no longer relied upon for accurate aim, which is obtained instead by gyro setting of Torpedoes.

Colour of Ships.

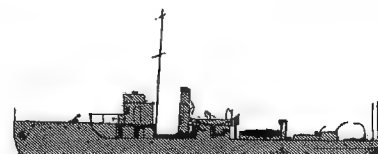
Battleships, Cruisers, Light Cruisers, Destroyers, are all dark grey. Destroyers have identity letters, taken from their names, painted on bows, e.g., AC = *G. Acerbi*, AU = *Audace*, NV = *I. Nievo*, IV = *Impavido*, PL = *R. Pilo*, OR = *V. Orsini*, MT = *A. Mosto*, etc.



BRONDOLO.
MARGHERA.
(Minelayers.)



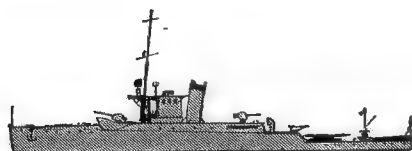
S. CAROTO.



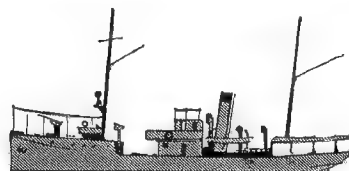
RD 31 type.



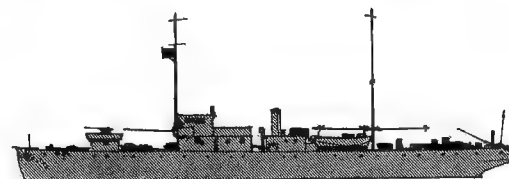
TESEO.



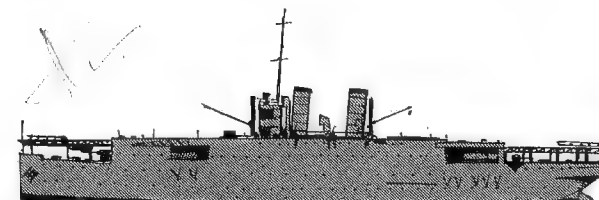
A. BAPILE class (5).



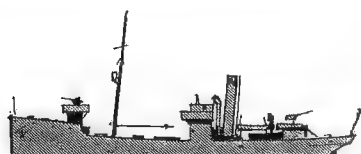
GEN. ARIMONDI.



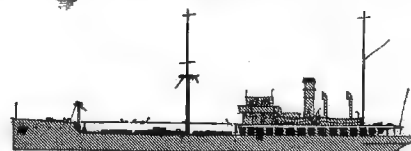
FASANA class.



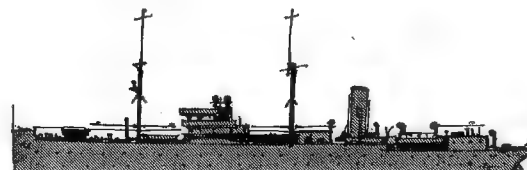
G. MIRAGLIA.



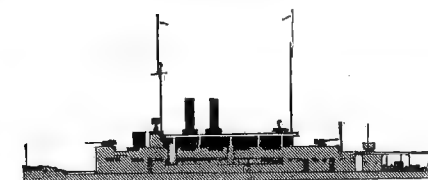
CIRENE.



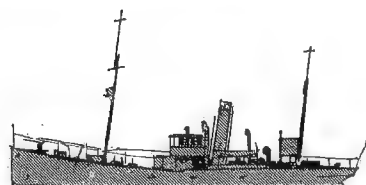
PANIGAGLIA class (3).
(Munition Carriers.)



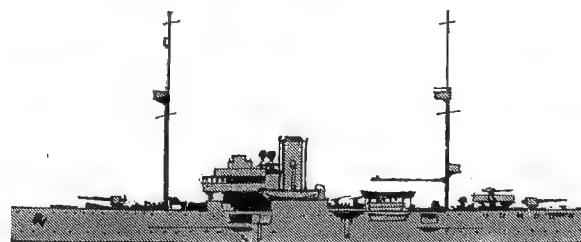
QUARNARO.



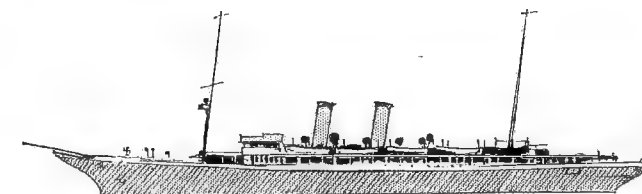
E. CARLOTTO.



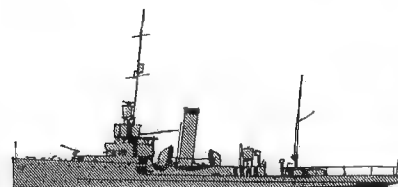
PALMAIOLA.



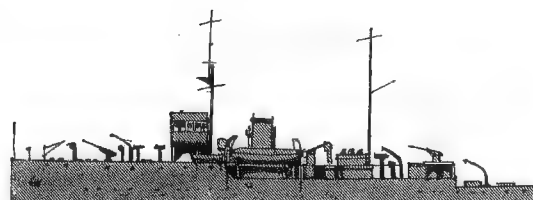
CAMPANIA.



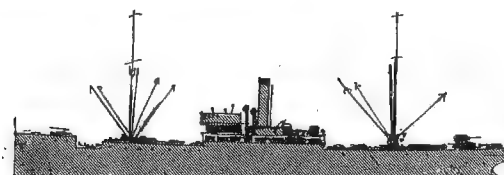
SAVOIA
(Royal Yacht.)



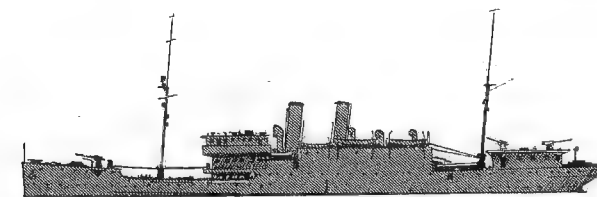
COTRONE.
VIESTI.



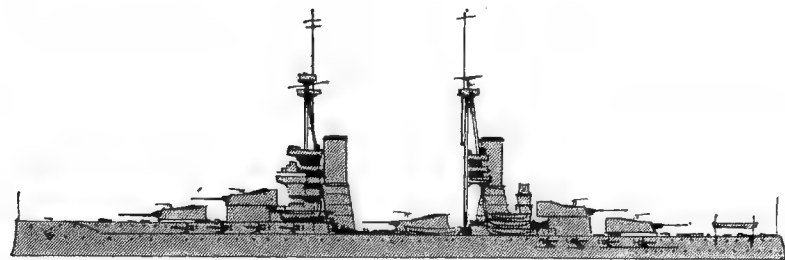
OSTIA class.



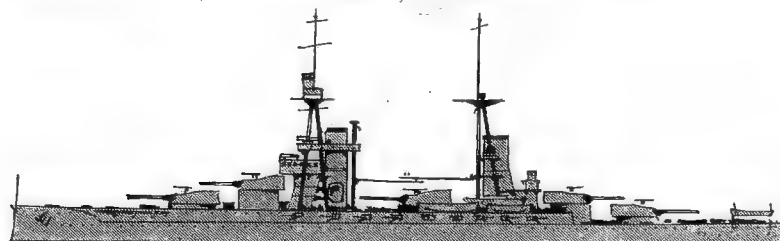
CHERSO.
LUSSIN.



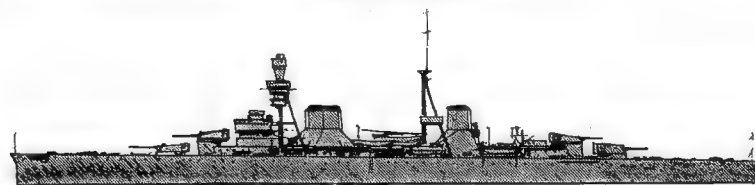
A. PACINOTTI.
A. VOLTA.



DORIA, DUILIO.



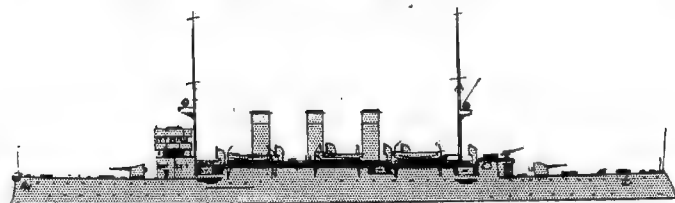
CAVOUR, CESARE.



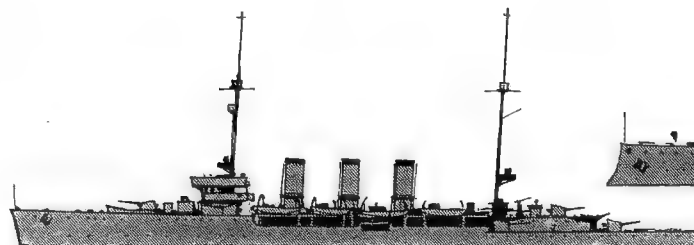
TRENTO, TRIESTE.



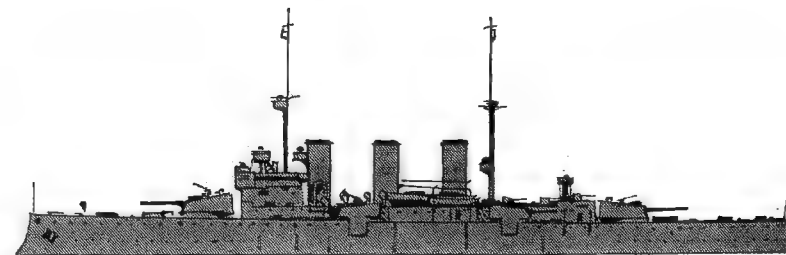
QUARTO.



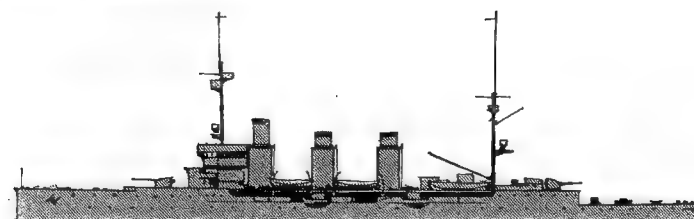
LIBIA.



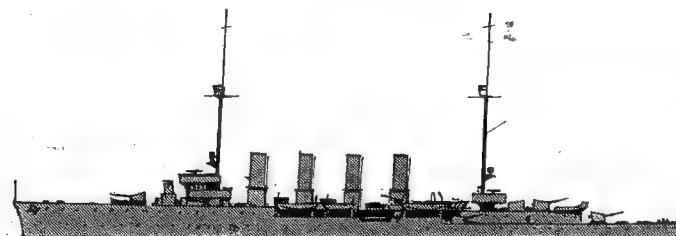
ANCONA.



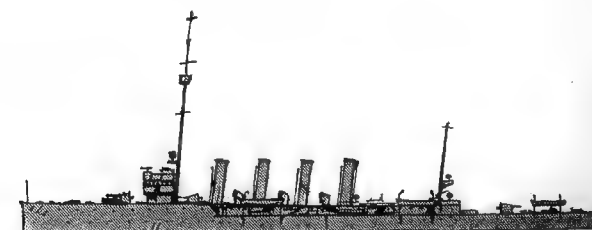
PISA



BARI



TARANTO.



BRINDISI, VENEZIA.



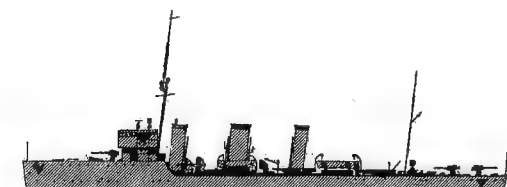
S. GIORGIO, S. MARCO.



AUDACE.



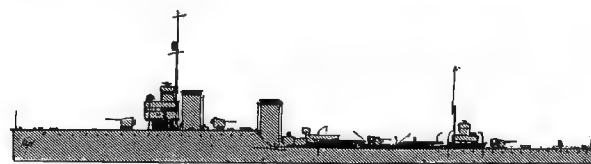
C. MIRABELLO class.



G. ABRA class.
INDOMITO class } Similar.
ARDEnte class }



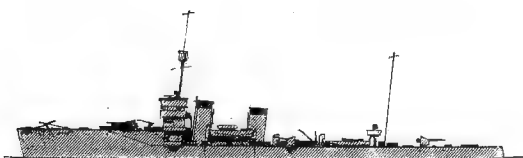
CURTATONE class.



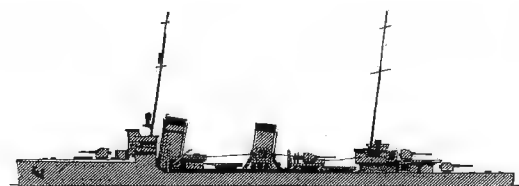
LEONE class.



G. SIRTORI class.
E. COSENZ class.
GENERALI class.



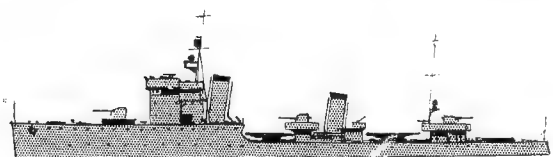
A. POERIO class.



PREMUDA.



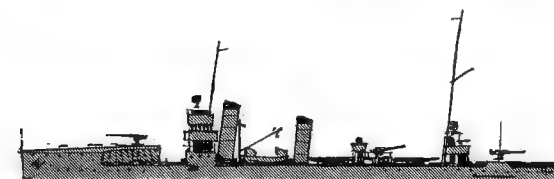
AQUILA, FALCO.



NAVIGATORI class.



F. NULLO class.



ARDIMENTOSO.



Q. SELIA class.



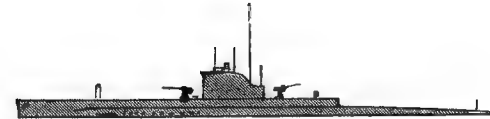
CORTELLAZZO class.



C. ROSSAROL.



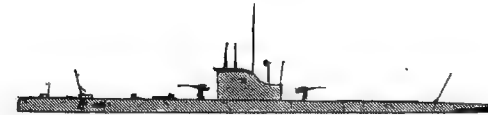
H class.



P. Micca class.



X 2, X 3.



G. Nani.



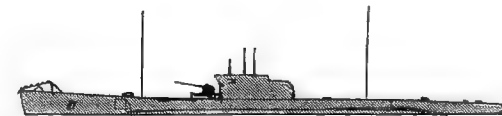
F class.



G. Mameli class.



N 6.



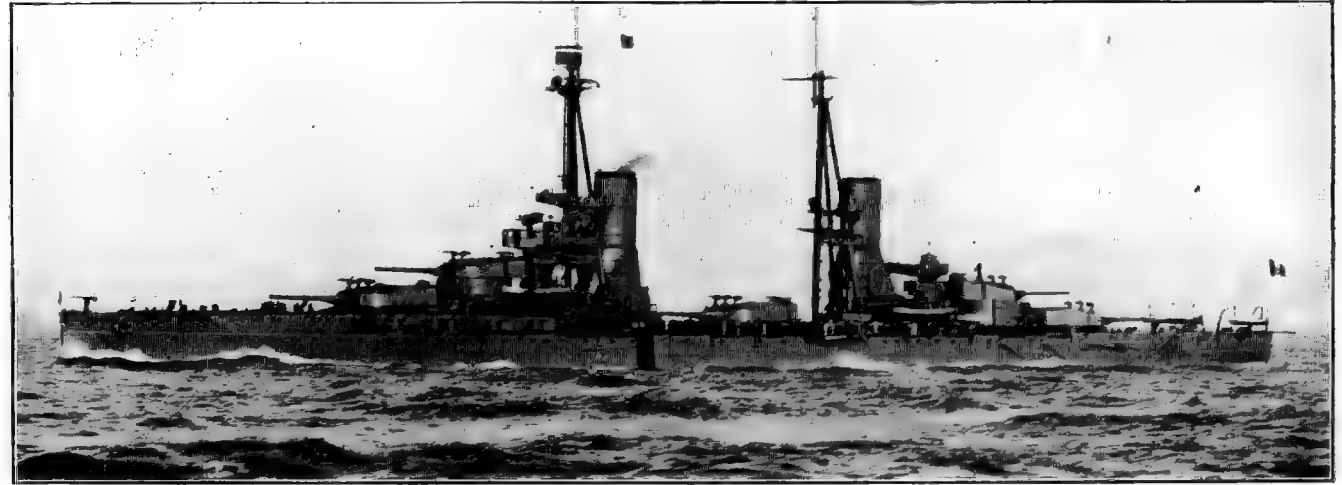
Balilla class.



N 1, N 3, N 4.

The following list of distinctive letters, painted on bows of destroyers, torpedo boats and convoy gunboats and on conning towers of submarines, has been furnished officially to "Fighting Ships" by the courtesy of the Ministry of Marine:—

AB ABBA	CT CURTATONE	MB MONZAMBANO	PO POERIO
AC ACERBI	CZ CORTELLAZZO	MD MEDICI	PA PAPA
AD AUDACE	CP CRISPI	MF MONFALCONE	PR PRESTINARI
AL AQUILONE		MN MONTANARI	PT PALESTRO
AM ARDIMENTOSO	DZ DEZZA	MS MISSORI	
AO ASCARO	DG DEL GRECO	MT MOSTO	RC RICASOLI
AR ARDENTE		MA MANIN	
AT ARDITO	ER EURO	ML MILLELIRE	SF SCHIAFFINO
	ES ESPERO	MO MOCENIGO	SL SOLFERINO
	EM EMO	MI MICCA	SM SAN MARTINO
BS BASSINI			SR SIRTORI
BF BAFLE	FB FABRIZI		ST STOCCO
BT BATTISTI	FC FUCILIERE	NV NIEVO	SE SELLA
BR BOREA	FR FARINATI	NC NICOTERA	SA SAURO
BL BALILLA		NB NEMBO	SC SCIESA
	GD GRADO	NL NULLO	
CA CARINI	GV GIOVANNINI	NA NANI	TB TURBINE
CD CASTELFIDARDO	GA GALVANI		TT TOTI
CE CANTORE		OR ORSINI	TO TORRICELLI
CF CONFENZA	IP IMPAVIDO	OS OSTRO	
CI CASCINO	ID INDOMITO		VT VITTURI
CL CAIROLI	IR IRREQUIETO		
CM CALATAFIMI	IS INSIDIOSO	PL POLA	ZF ZEFFIRO
CH CHINOTTO		PE PEPE	
CS COSENZ	LF LA FARINA	PI PILO	
	LM LA MASA		



DUILIO.

1927 Official Photo.



DORIA.

Photo added 1927.

SPECIAL VIEWS
(added 1927).

ITALY—Battleships.

1912 BATTLESHIPS (*Navi da Battaglia de 1^a Classe*).

(DUILIO CLASS—2 SHIPS).

DUILIO (ex-*Caio Duilo*, April, 1913) and **DORIA** (ex-*Andrea Doria*, March, 1913).

Standard displacement, 21,900 tons; normal displacement, 22,930 tons. Complement, 1198.

Length (p.p.) 554.3 feet. Beam, 91.8 feet. Mean draught, 30.7 feet. Length over all, 575 feet, 9 ins.

Guns (Armstrong or Vickers):

13—12 in., 46 cal. (A⁵).

16—6 inch (45 cal.)

13—14 pdr.*

6—14 pdr. (A.A.)

8 M.G.

2 landing.

Torpedo tubes (18 inch):

2 broadside (*submerged*).

*3—14 pdr. temporarily removed during war.

Armour (Terni):

9 $\frac{3}{4}$ "—8" Belt (amidships) {

5" Belt (ends).....

1 $\frac{3}{4}$ " and 1 $\frac{1}{2}$ " Decks

6 $\frac{3}{4}$ " Lower deck side

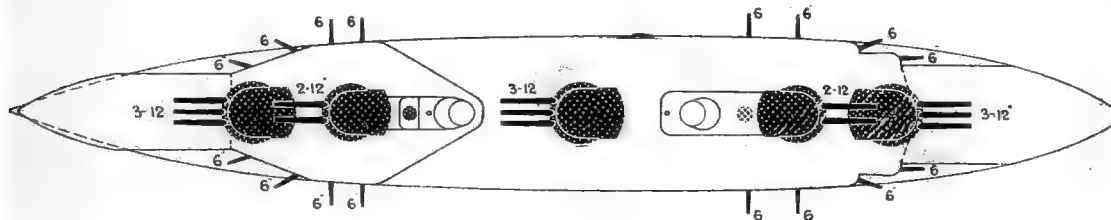
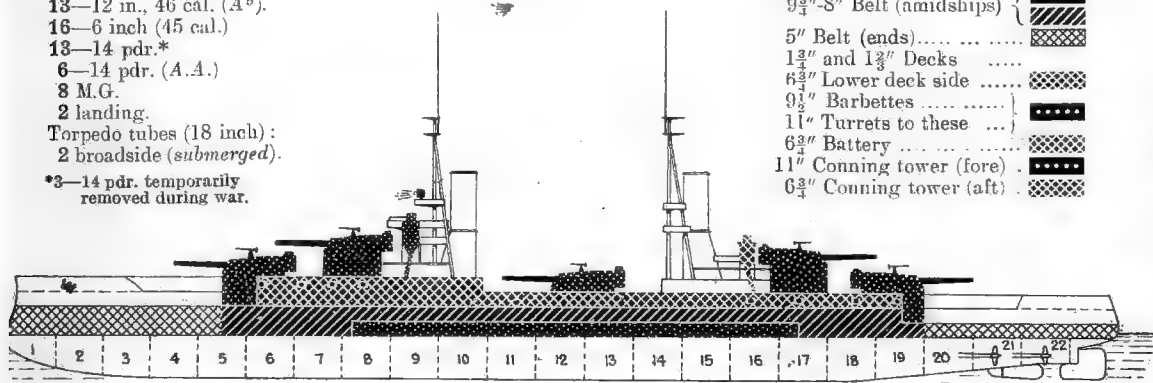
9 $\frac{1}{2}$ " Barbettes

11" Turrets to these

6 $\frac{3}{4}$ " Battery

11" Conning tower (fore)

6 $\frac{3}{4}$ " Conning tower (aft)



Ahead:

5—12 in.

4—6 in.

Broadside: 13—12 in., 8—6 in.

Astern:

5—12 in.

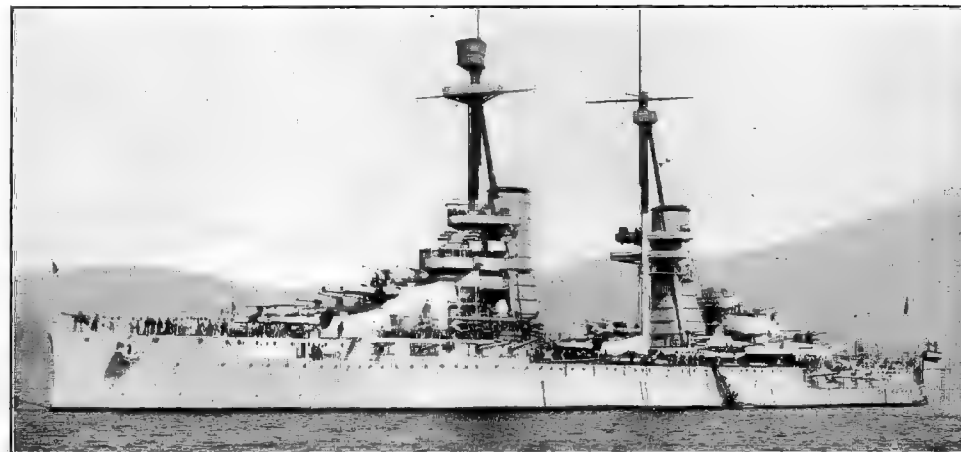
4—6 in.

Machinery: Parsons turbine. 4 screws. Boilers: 20 Yarrow (small tube). Designed S.H.P. 24,000 = 22 kts., but actually need 33,000–35,000 S.H.P. for this speed. Coal: normal 580 tons; maximum 1450 tons + oil fuel: normal 340 tons, maximum 850 tons—about 4000 miles at 10 kts. and 2600 miles at 19 kts.

†Gunnery Notes: { As *Cavour* class on next page. Range-finders mounted to the rear of roof of each barbette shield in armoured hoods and over each C.T. 3 inch (14 pdrs.) are 50 cal. Armstrong or 60 cal. Vickers. 8 searchlights. †All details unofficial.

Name	Builder	Machinery	Laid down	Completed	Trials H.P.=kts.	Boilers	Best recent speed
<i>Duilio</i>	Castellamare D.Y.	Ansaldo	Apr. '12	1915	31,000=21.3 at 22,135 tons	Yarrow	23.2
<i>Doria</i>	Spezia	Ansaldo	Mar. '12	May '15	31,000=21. at 23,620 tons.	Yarrow	

General Notes.—Are improved *Cavour* design, 16—6 inch being substituted for 18—4.7 inch. Otherwise—and excepting altered appearance—there is very little difference between the classes. Machinery, main guns, hull form and internal sub-division, exactly as *Cavours*, and also with same form of triple bottom. Designed by Engineer-Gen. Masdea. These ships exceed their designed displacement of 22,500 tons in the same manner as *Cavour* and *Cesare*, and require to develop 10,000 S.H.P. in excess of designed S.H.P., to reach their designed speed.



DORIA.

1924 Official Photo.

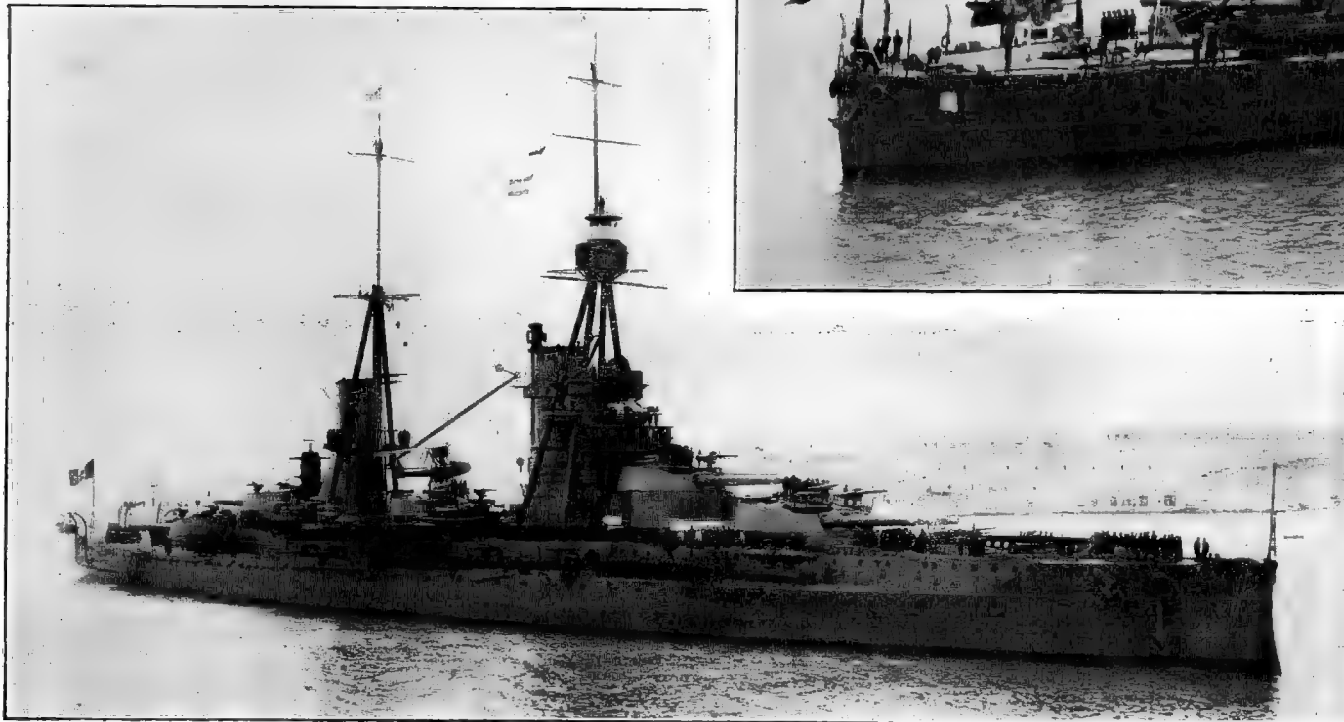


DUILIO.

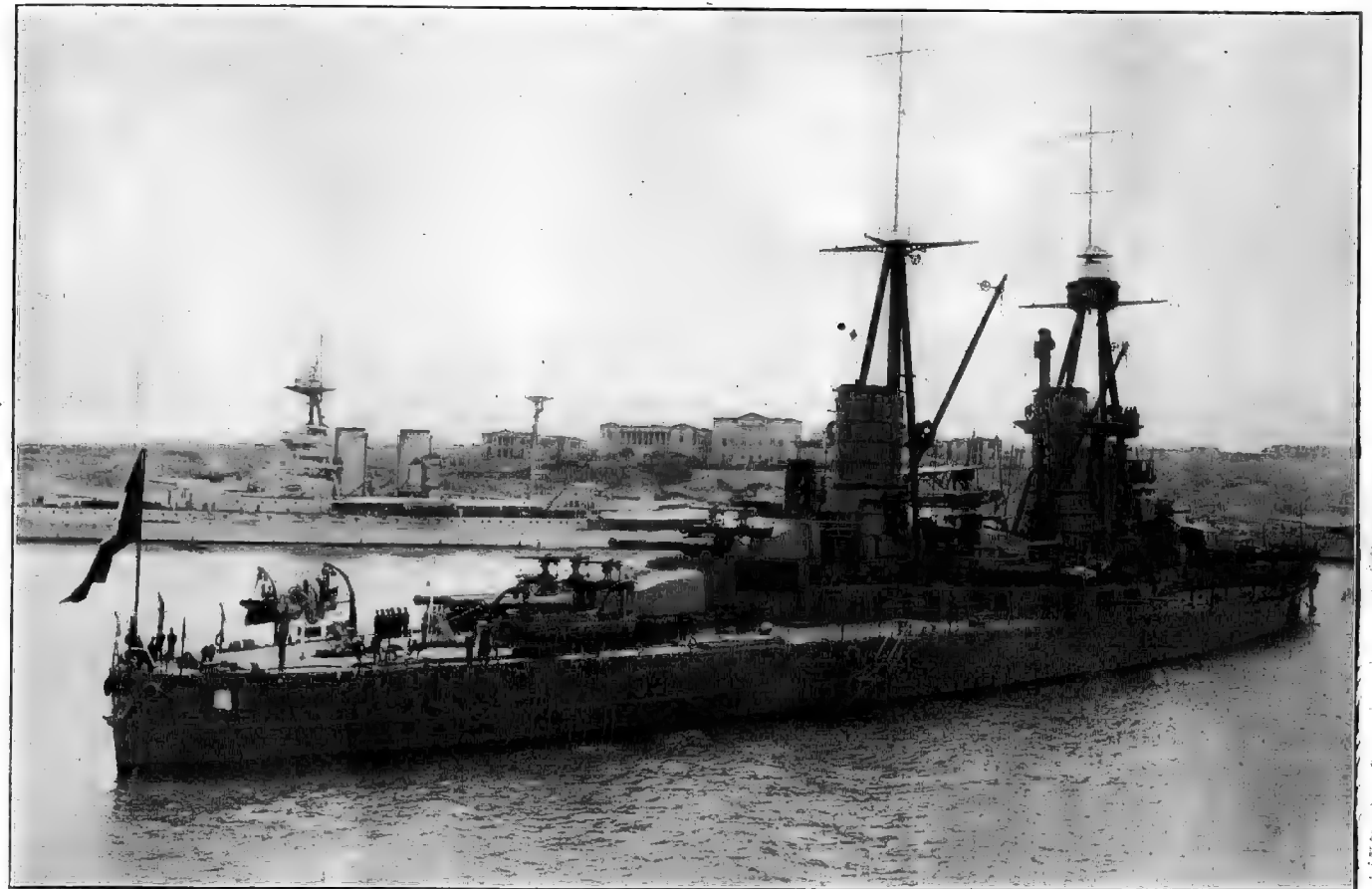
1924 Official Photo.

SPECIAL VIEWS

(added 1926).



Cavour.



CESARE.

1926 Photo, Cassar, Malta.

1926 Photo, Cassar Malta.

ITALY—Battleships.

1910 BATTLESHIPS.

(CESARE CLASS—2 SHIPS).

CAVOUR (ex-*Coute di Cavour*, Aug., 1911), **CESARE** (ex-*Giulio Cesare*, Oct., 1911).
Standard displacement, 20,290 tons. Normal displacement: *Cavour*, 23,089 tons, *Cesare*, 22,380 tons.
Complement, 1197.

Length (p.p.) 554.3 feet. Beam, 91.8 feet. Mean draught, 30.7 feet. Length over all, 557 feet 9 inches.

Guns (Armstrong):

- 13—12 in., 46 cal.
- 18—4.7 inch, 50 cal.
- 13—14 pdr., 50 cal.*
- 6—14 pdr. AA.
- 8 machine.
- 2 landing.

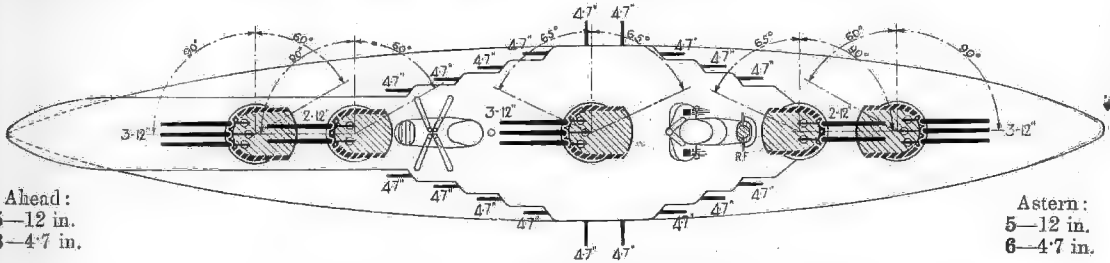
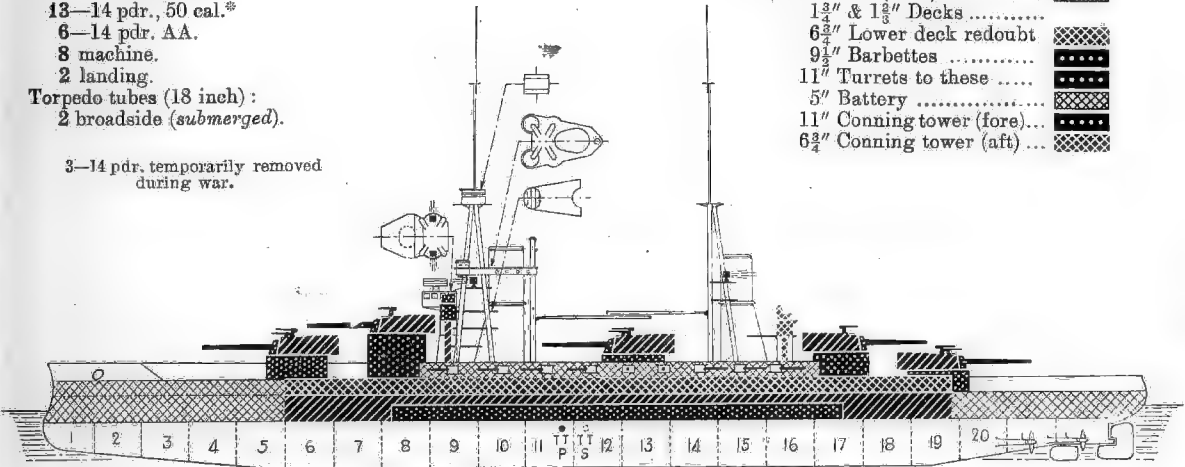
Torpedo tubes (18 inch):

- 2 broadside (submerged).

3—14 pdr. temporarily removed during war.

Armour (see Notes):

- 9 3/4" Belt (amidships)
- 5" Belt (ends)
- 1 3/4" & 1 1/2" Decks
- 6 3/4" Lower deck redoubt
- 9 1/2" Barbettes
- 11" Turrets to these
- 5" Battery
- 11" Conning tower (fore)
- 6 3/4" Conning tower (aft)



Ahead:
5—12 in.
8—4.7 in.

Astern:
5—12 in.
6—4.7 in.

Broadside: 13—12 in., 9—4.7 in.

Machinery: Parsons turbine. 4 screws. Boilers: various, see Notes. Designed S.H.P. 24,000= 22 knots, but actually require 32,000 to 32,500 S.H.P. for this speed. Coal: normal 580 tons; maximum 1450 tons. Oil: normal 340 tons, maximum 850 tons. Endurance: about 4540 miles at 10 kts., and 2900 miles at 19 kts.

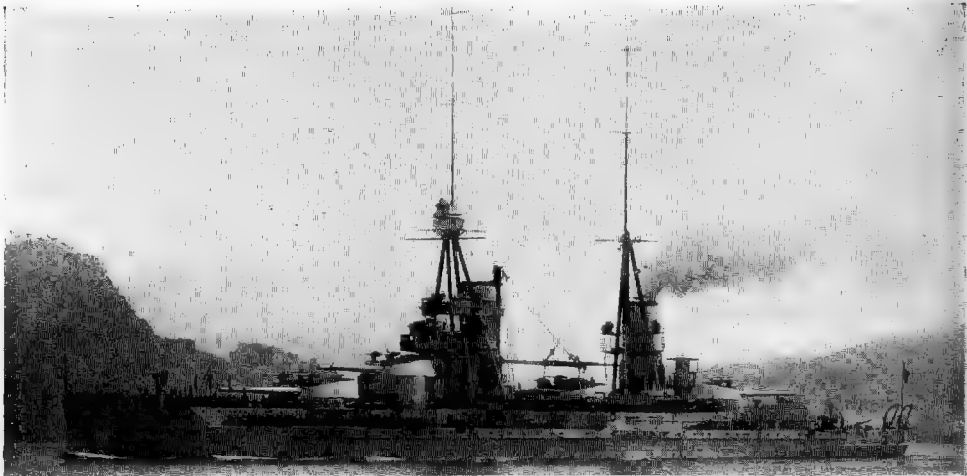
Gunnery Notes.—Arcs of fire: End triples 300°, super-firing twin barbettes 310°, amidships triple 130° each beam. 14 pdr. can be transferred to different mountings in various positions in these ships. These notes are unofficial.

Armour Notes.—*Cavour*, *Terni*; *Cesare*, *Bethlehem*. Hull has triple bottom around keel. Usual Torp. Pro. Bulkhead's over machinery and magazine spaces, but it is officially admitted such protection is inadequate to-day. Triple turret, armour, guns, mountings, weighs about 700 tons, twin turret, about 500 tons.

Name	Builder	Machinery	Laid down	Completed	Trials Full Power	Boilers	Best recent speed
<i>Cavour</i>	Spezia D.Y.	Orlando	Aug. '10	Jan. '15	H.P. 31,278 = 22 kts.	20 Blechyn'd'n	
<i>Cesare</i>	Ansaldo	Ansaldo	Jun. '10	Mar. '14	30,700 = 21.16	24 Babcock	

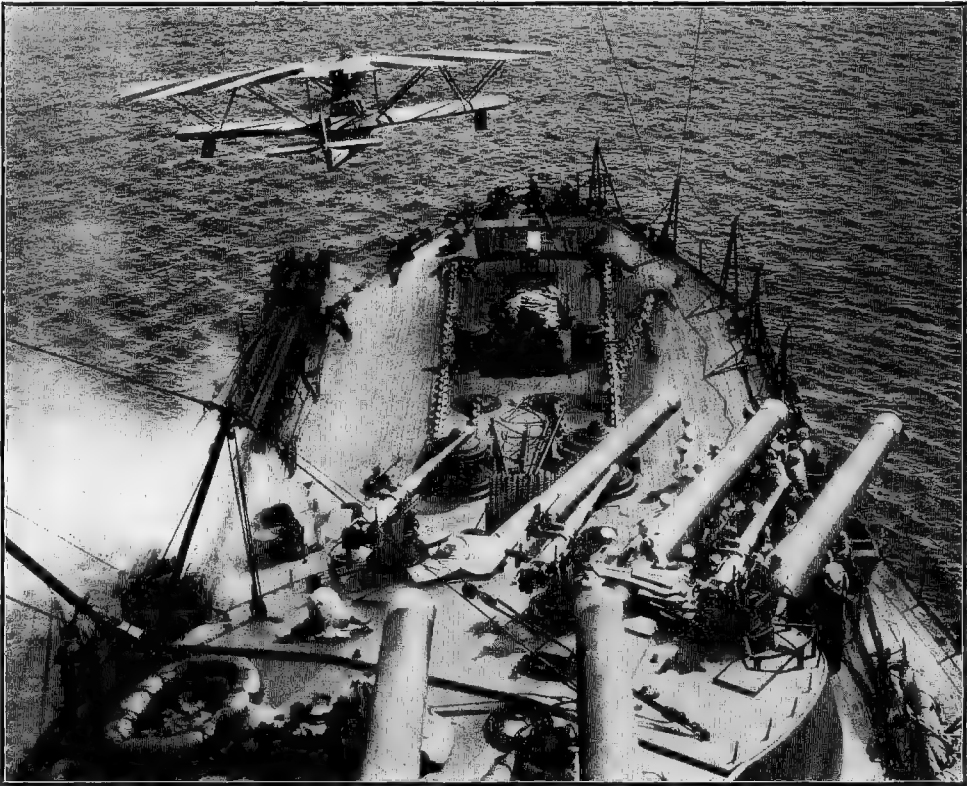
General Notes.—Designed by Engineer Gen. Masdea, 1908. Were designed to displace 22,500 tons at 27 1/2 feet mean draught. Alterations during construction added 2000 tons to displacement and 3 feet to mean draught. They can only reach their designed speed with difficulty. Third ship of class, *Leonardo da Vinci*, blew up at Taranto, August, 1916, salvaged and docked upside down 1920. Re-capsized Jan., 1921, and since sold for scrap.

Aircraft Notes.—Catapult on forecastle. Plane is now stowed there instead of amidships, as formerly.



CAVOUR.

1922 Photo, by the courtesy of the Ministry of Marine.



CAVOUR (showing flight from catapult on forecastle).

1927 Photo.

(ZARA CLASS.—4 SHIPS.)

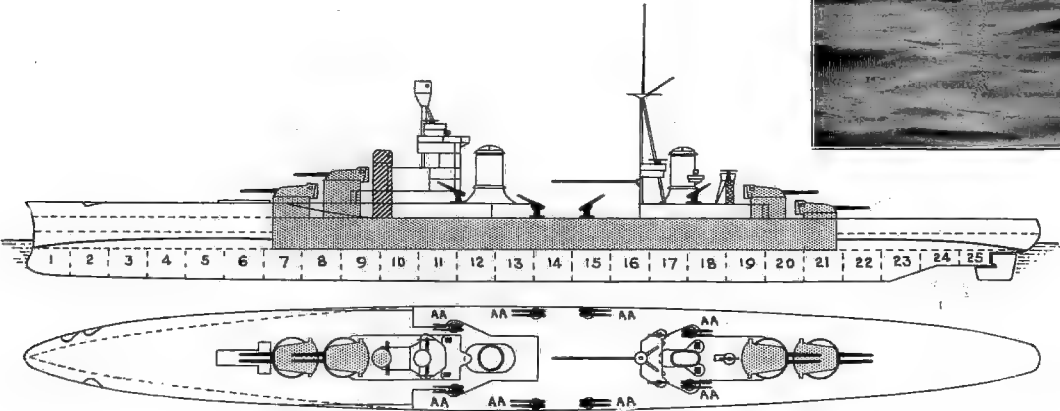
ZARA, FIUME, BOLZANO, GORIZIA.

“Standard” displacement, 10,000 tons. Complement,

Length (p.p.), 599½ feet. Beam, 67⅔ feet. Draught, 22 feet.

Guns :
8—8 inch, 50 cal.
16—3.9 inch, 47 cal. AA.
Torpedo tubes :
8, in pairs (above water)
on main deck.

Armour :
5½" Belt
5" Turrets
2½" Battery
4½" Transverse Bulkheads ..
" C.T.
" Deck



ZARA.

1929 Drawing by Oscar Parkes.

Machinery : Parsons geared turbines. S.H.P. 95,000 = 32 kts. 2 screws. Oil fuel : 1450 tons normal, 2200 tons maximum. Radius : 3200 miles at 25 kts.

General Notes.—First pair laid down under 1928 Programme, second pair under that for 1929.

Name	Builder	Machinery	Laid down	Completed	Trials
Zara	Odero-Terni		1928		
Fiume	Stab. Tecnico		1928		
Bolzano			1929		
Gorizia	Orlando		1929		

1923 CRUISERS. (*Incrociatori*).

TRENTO CLASS.—2 SHIPS.

TRENTO (Orlando, Leghorn, Oct. 4th, 1927),

TRIESTE (Stab. Tecnico, Trieste, Oct. 24th, 1926).

Standard displacement, 10,000 tons. Complement,

Length (*n.p.*), 624, (*o.a.*), 612 feet, Beam, 67½ feet

Mean draught, 19 feet.

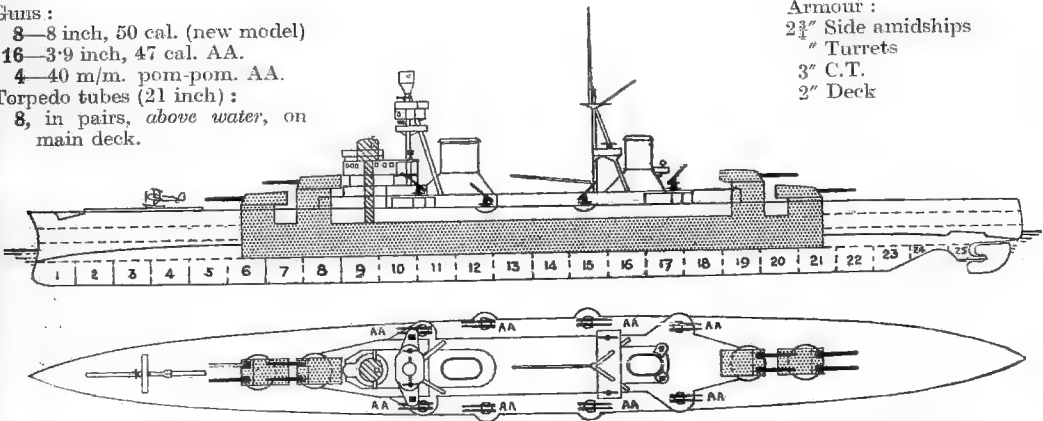


TRENTO.

1928 Official Photo.

Guns :
8—8 inch, 50 cal. (new model)
16—3·9 inch, 47 cal. AA.
4—40 m/m. pom-pom. AA.
Torpedo tubes (21 inch) :
8, in pairs, above water, on
main deck.

Armour :
2½" Side amidships
" Turrets
3" C.T.
2" Deck



Plan revised 1928.

Machinery : Parsons geared turbines. S.H.P. 150,000 = 35·5 kts. 12 Yarrow boilers (300 lbs. pressure). Oil fuel : 3000 tons.

General Notes.—Laid down under 1923-24 Programme. *Trento*, 8/2/25; *Trieste*, in March, 1925. Carry three scouting seaplanes, equipped for bombing. Design modified during construction. They were originally to have had hangar amidships, but this idea has been abandoned and a catapult installed on forecastle. In the revised design, after C.T. is dispensed with, AA. armament redistributed, and additional mast control tops added. These ships are believed to be much more lightly constructed than British *Kent* class, in order to attain a high speed. Completion dates : *Trento*, Sept., 1928; *Trieste*, Dec., 1928.

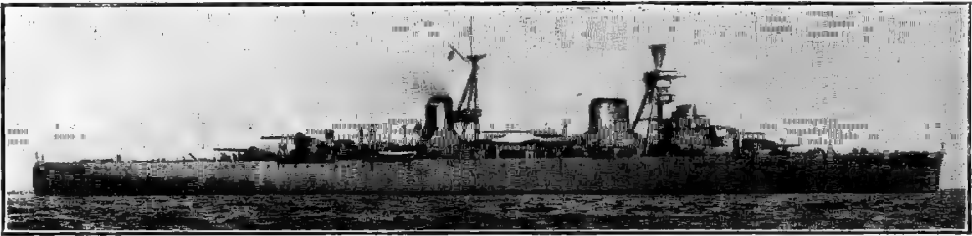
Gunnery Notes.—8 inch reported to be remarkably powerful weapons with exceptional range. Maximum elevation is 45°.

Engineering Notes.—Trials in August, 1928, are said to have given an average speed of 35 kts. with 149,000 H.P. and consumption of 68 tons of oil per hour. Maximum figure reached reported to have been 38 kts.



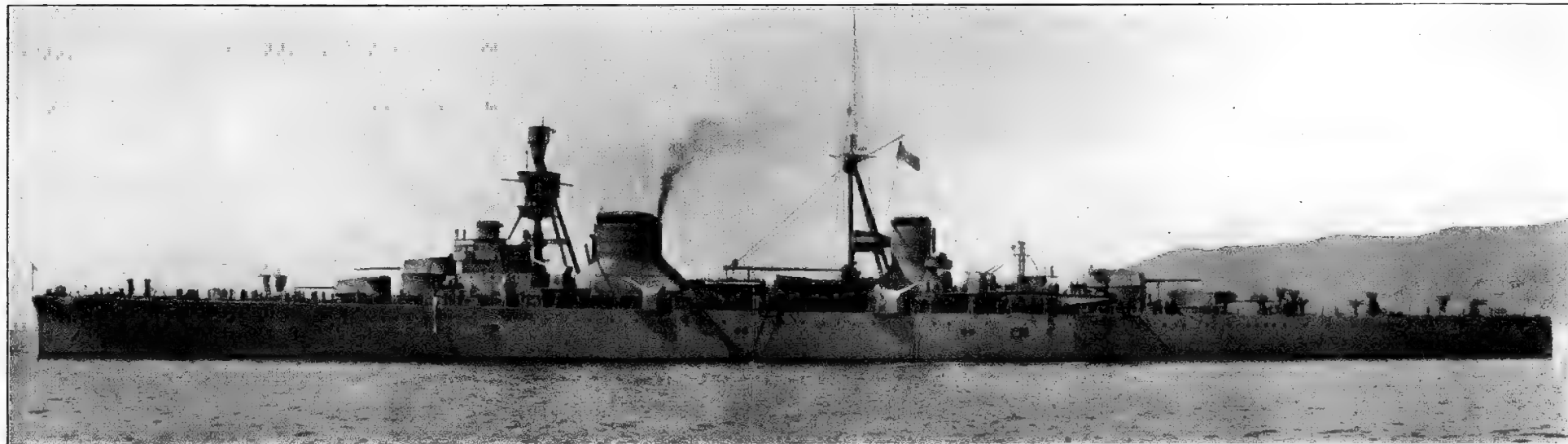
TRENTO.

1928 Photo, by favour of Captain Mateo Mille, R.S.p. N°



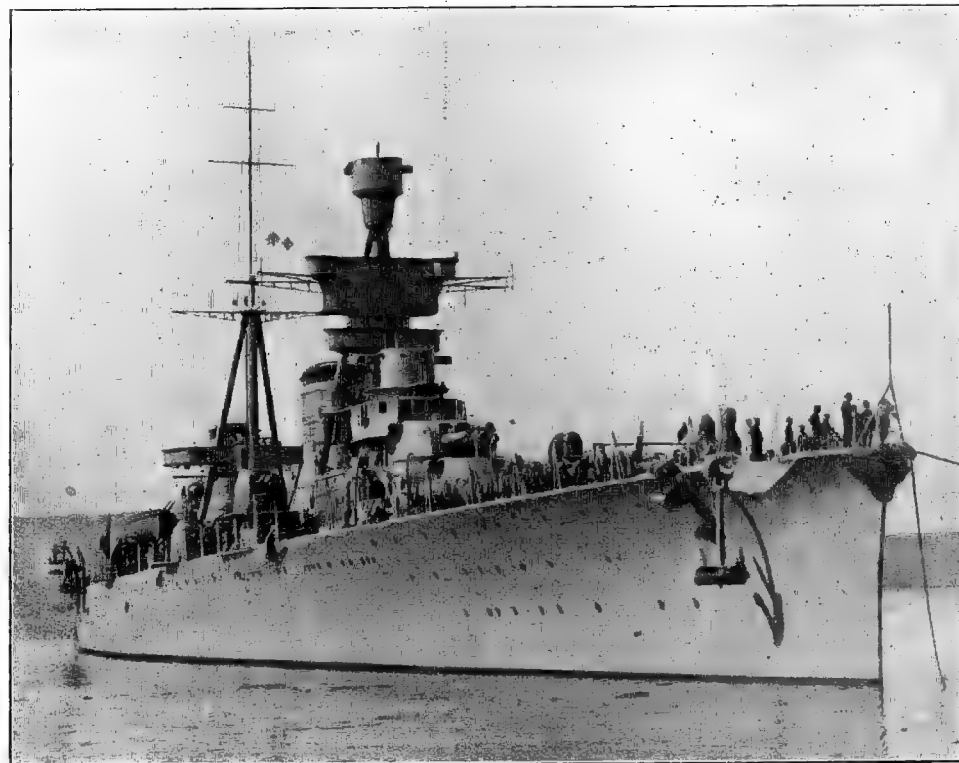
TRENTO.

1928 Photo, by courtesy of "L'Italia Marinara."



TRIESTE.

1929 Photo, by favour of Capitan M. Mille, R.Sp.N.



TRIESTE.

1929 Official Photo.

ITALY—Armoured Cruisers.

1905-07 ARMOURD CRUISERS. Officially rated as 2nd class Battleships, (Navi da battaglia di 2ª classe).

(SAN GIORGIO CLASS—2 SHIPS.)

SAN GIORGIO (July, 1908), **SAN MARCO** (December, 1908).

Standard displacement { *San Giorgio*, 9380 tons. *San Marco*, 9500 tons. } Normal displacement { *San Giorgio*, 10,200 tons. *San Marco*, 11,000 tons. }

Complement, 726.

Length (p.p.), 429 feet 11 in. Beam, 69 feet. { *S.G.* mean draught: 24 feet, max. 26½ feet. }
 { *S.M.* mean " 25½ feet, max. 27 feet. }

Length over all, 462¼ feet.

Plans revised, 1926.

Guns:

4—10 inch, 45 cal.

8—7.5 inch, 45 cal.

10—14 pdr.

6—14 pdr. AA.

6 machine.

2 landing.

Torpedo tubes (18 inch):

2 submerged (broadside).

Armour (S.M., Midvale;

S.G., Terni):

8" Belt (amidships) ...

2½" Belt (ends) ...

1½" & 1½" Decks ...

7" Lower deck redoubt ...

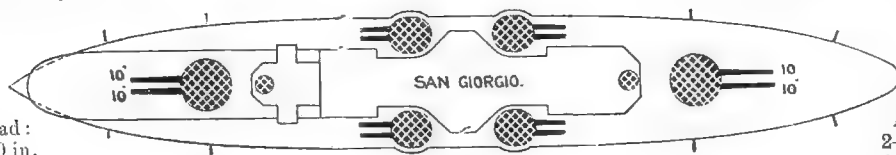
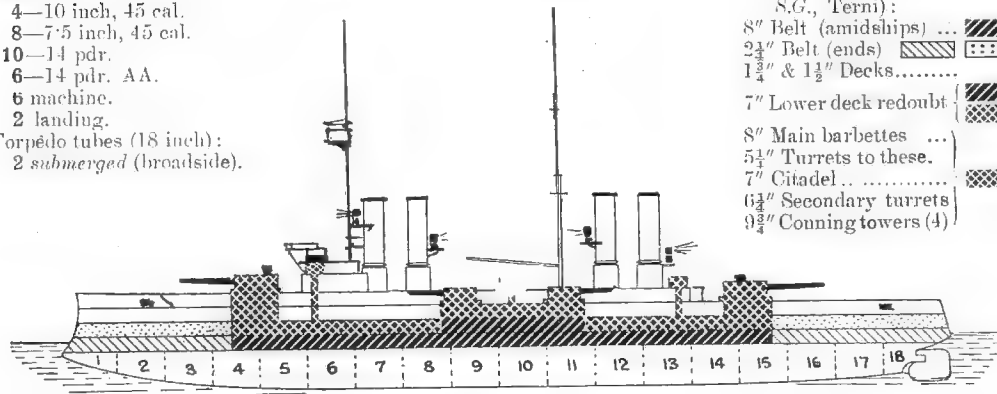
8" Main barbettes ...

5½" Turrets to these.

7" Citadel ...

6½" Secondary turrets

9½" Conning towers (4)



Ahead:

2—10 in.

4—7.5 in.

Astern:

2—10 in.

4—7.5 in.

Broadside: 4—10 in., 4—7.5 in.

Machinery: *S. Marco*, Parsons turbine; 4 screws. *S. Giorgio*, 2 sets 4 cylinder inverted triple expansion; 2 screws. Boilers: various. See Notes. Designed H.P., *S. Giorgio*, 18,000 I.H.P.=22.5 kts.; *S. Marco*, 20,000 S.H.P.=23 kts. Coal: normal 700 tons; maximum 1570 tons for *S. Giorgio*, 1400 for *S. Marco*. Endurance: at 10 kts., 6270 miles for *San Giorgio*, 4800 miles for *San Marco*; 2640 miles at 20 kts. for *San Giorgio*, about 2500 miles at 21½ kts. for *San Marco*.

Gunnery Notes.—All guns electrically controlled. Central pivot mountings. Fore 10 inch, 31 feet above waterline; aft 10 inch, 22 feet; 7.5 inch guns 22 feet above water. Armored fire-control towers between 7.5 inch barbettes. (These details are not official).

Name.	Builder.	Machinery	Laid down.	Completed	Trials: full power	Boilers	Best recent speed
<i>S. Giorgio</i>	Castellammare D.Y.	Ansaldo	May '05	June '10	H.P. Kts. 19,595 = 23.2 at 9670 tons	14 Blechynden	
<i>S. Marco</i>	Castellammare D.Y.	Ansaldo	Jan. '07	July '10	23,030 = 23.75 at 10,175 tons	14 Babcock	

General Notes.—Designed by Engineer Lieut.-Gen. Masdea. In 1913, *S. Giorgio* grounded badly off C. Posillipo (Bay of Naples), but was salvaged and repaired. She was again badly damaged by stranding in Straits of Messina early in 1914. Both have been recently employed as Cadets' Training Ships.



SAN MARCO.

1925 Photo, Bassan.



SAN GIORGIO.

To distinguish between these two ships note positions of S.L.

1925 Photo, Pucci.

1905 ARMoured CRUISERS 1900.

Armoured Cruisers—ITALY

Officially rated as 2nd Class Battleships, but at present employed as Sea-going Training Ships for Cadets.

PISA (Sept., 1907).

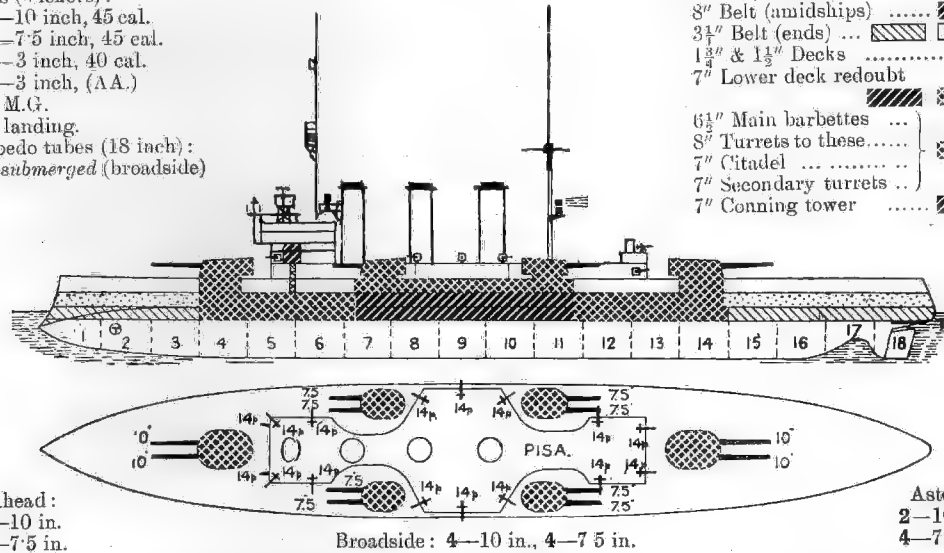
Standard displacement, 8900 tons. Normal displacement, 10,600 tons. Complement, 729.

Length (p.p.), 426½ feet. Beam, 68 feet 11 ins. Mean draught, 24½ feet. Maximum draught, 25½ feet.
Length over all, 460 feet 11 ins.

Plans revised, 1926.

Guns (Vickers):
4—10 inch, 45 cal.
8—7.5 inch, 45 cal.
12—3 inch, 40 cal.
3—3 inch, (A.A.)
4 M.G.
2 landing.
Torpedo tubes (18 inch):
2 submerged (broadside)

Armour (Vickers):
8" Belt (amidships)
3½" Belt (ends)
1½" & 1½" Decks
7" Lower deck redoubt
6½" Main barbettes
8" Turrets to these
7" Citadel
7" Secondary turrets
7" Conning tower



Ahead:
2—10 in.
4—7.5 in.

Broadside: 4—10 in., 4—7.5 in.

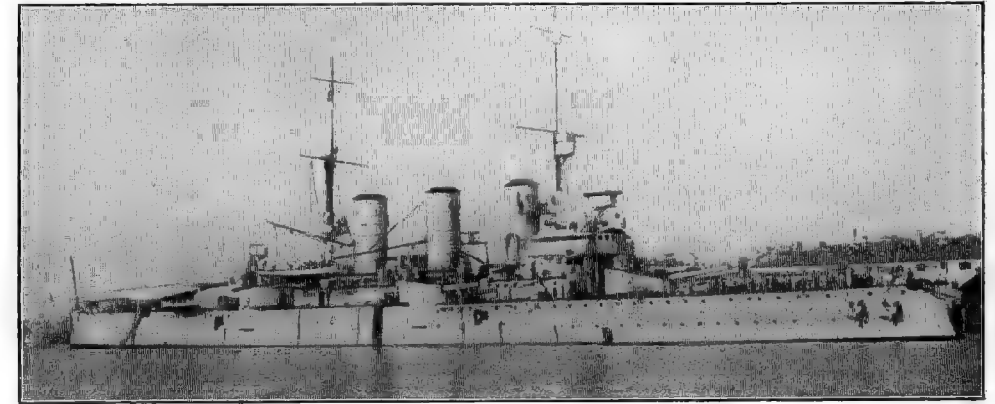
Astern:
2—10 in.
4—7.5 in.

Machinery: 2 sets 4 cylinder inverted triple expansion. 2 screws. Boilers: 22 Belleville. Designed H.P. 20,000 = 23 kts. Coal: normal 680 tons; maximum 1510 tons + 140 oil. Endurance: 6,270 miles at 10 kts., 2,300 miles at 21½ kts.

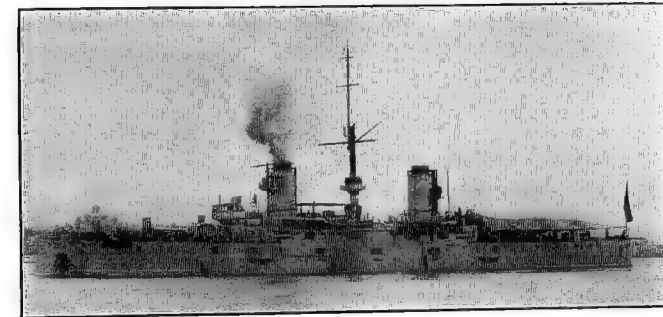
Gunnery Notes.—All guns electrically controlled. Central pivot mountings. Guns 22 feet above water. Secondary armament is being reduced to allow of increased accommodation for cadets.

Name	Builder	Machinery	Laid down	Completed	Trials	Boilers	Best recent speed
Pisa	Orlando, Leghorn	Orlando	July, '05	Dec., '09	24 hrs. = 21.4 kts. 6 hrs. 20,808 = 23.5 " (at 10,130 tons)	Belleville	

General Notes.—Designed by Ing. Giuseppe Orlando. The *San Giorgio* class (v. preceding page) is a slightly enlarged *Pisa*. A sister-ship, *Amalfi*, lost in the war.



1925 Photo, Bassan.



F. FERRUCCIO;

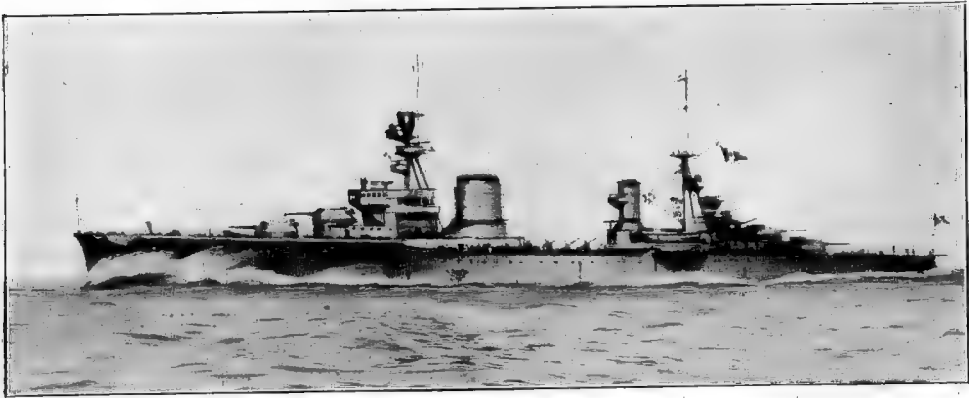
FRANCESCO FERRUCCIO (April, 1902). Obsolete Armoured Cruiser, officially reckoned non-effective but retained for training purposes. Displacement, 7350 tons. Dimensions: 344 × 59½ × 24 feet. Guns: 1—10 inch, 40 cal., 2—8 inch, 45 cal., 3—6 inch, 40 cal., 6—14 pdr., etc. Torpedo tubes (18 inch): 4 above water. Armour (Terni): 6" belt amidships, 3" belt ends, 1½" deck, 6" lower deck, 6" barbettes; hoods and battery, 5" battery bulkheads, 6" C.T. Machinery: 2 sets triple expansion. 2 screws. Boilers: 24 Niclausse. Designed H.P., 13,500 = 20 kts. Coal: normal 650 tons, maximum 1215 tons. Complement, 367.

General Note.—About 100 midshipmen and cadets are usually carried in each of these ships, in addition to complements stated.

ITALY—Cruisers.

CRUISERS (*Incrociatori Leggeri*).

1927 Cruisers.



BANDE NERE.

("CONDOTTIERI" CLASS—6 SHIPS.)

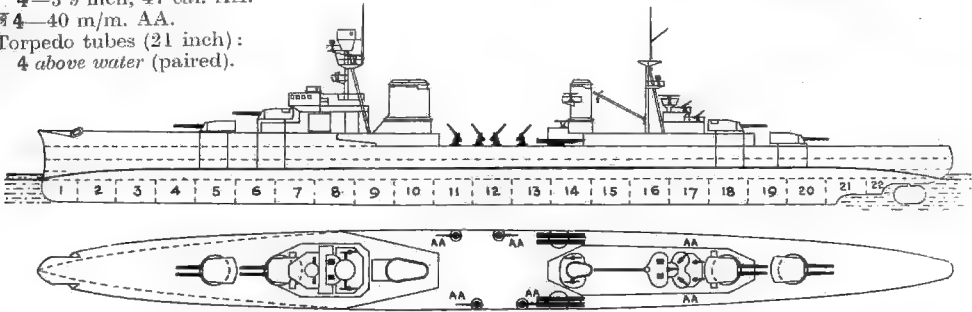
1929 Drawing by Oscar Parkes.

GIOVANNI DELLÈ BANDE NERE, BARTOLOMEO COLLEONI, ALBERICO DA BARBIANO,
ALBERTO DA GIUSSANO, MARESCIALLO CADORNA, MARESCIALLO DIAZ.

Standard displacement, 5250 tons. Complement,
Length, 597 feet. Beam, 51 feet. Draught, 14 feet.

Guns :
8—6 inch.
4—3.9 inch, 47 cal. AA.
4—40 m/m. AA.
Torpedo tubes (21 inch):
4 above water (paired).

Armour :
Probably only a protec-
tive deck.



Machinery : Geared turbines. Designed H.P. 95,000 = 37 kts.

Gunnery Notes.—6 inch guns are of a new and very powerful model and are to be mounted in pairs on centre line.

Name	Builder	Machinery	Laid down	Completed	Trials
<i>Bande Nere</i>	Castellamare D.Y.		1928		
<i>Colleoni</i>	Ansaldo	Ansaldo	1928		
<i>Barbiano</i>	Ansaldo	Ansaldo	1928		
<i>Giussano</i>	Ansaldo	Ansaldo	1928		
<i>Cadorna</i>			1929		
<i>Diaz</i>			1929		

1 ex-German Cruiser.



1925 Photo, by courtesy of the Ministry of Marine.

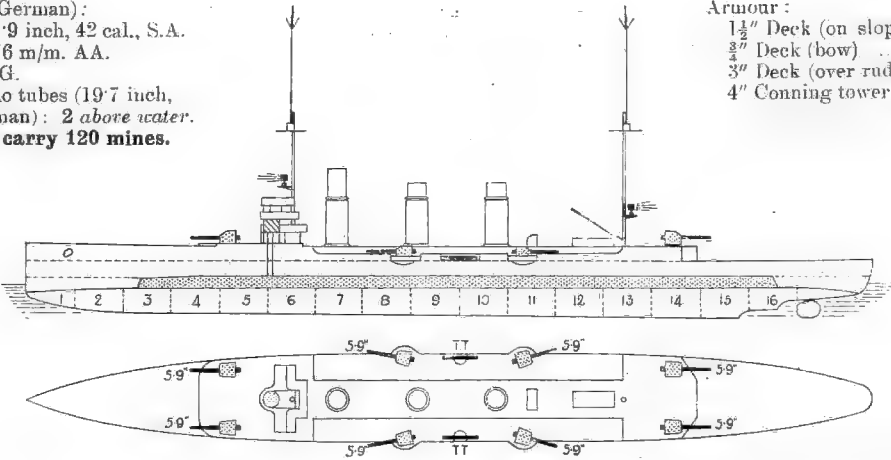
BARI (ex-German Pillau, ex-Russian Muraviev Amurski, April, 1914).

Standard displacement, 3300 tons. Normal displacement, 4600 tons. Complement, 398.

Length (p.p.), 403 feet. Beam, 46 feet. { Mean draught, 16 feet.
Max. " 19 feet. } Length (o.a.), 441 feet.

Guns (German):
8—5.9 inch, 42 cal., S.A.
4—7.6 m/m. AA.
3 M.G.
Torpedo tubes (19.7 inch,
German): 2 above water.
Can carry 120 mines.

Armour :
1½" Deck (on slopes)...
3" Deck (bow)
3" Deck (over rudder)
4" Conning tower



Machinery : Schichau (Melms & Pfenninger) turbines. 3 screws. Designed H.P. 27,400=27½ kts.
Boilers : Schichau. Coal : normal 500 tons and 750 tons oil fuel=4500 miles at 10 kts.

General Notes.—Built by Schichau, Danzig, April, 1913—December, 1915. A sister ship, *Elbing*, sunk in the Battle of Jutland. Both vessels were seized by Germany on outbreak of war with Russia, for whom they were originally laid down. *Bari* taken over by Italy, 1920.



ANCONA. **ANCONA** (Ex-German *Graudenz*, October, 1913). 1925 Photo, Pucci.

Standard displacement, 3900 tons. Normal displacement, 5300 tons. Complement 427.
Length (waterline), 456 feet. Beam, 45 feet. Mean draught, 16 feet. (Max. 17 feet)

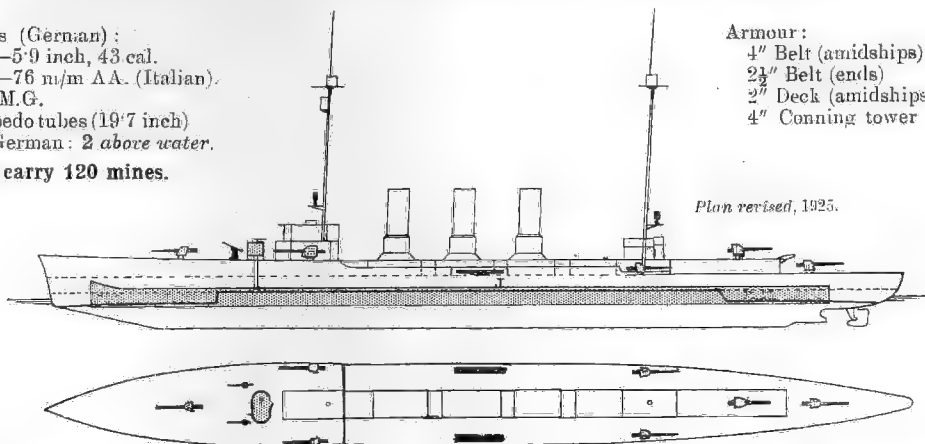
Guns (German):
7—5.9 inch, 43 cal.
3—76 mm AA. (Italian).
3 M.G.

Torpedo tubes (19.7 inch)
German: 2 above water.

Can carry 120 mines.

Armour:
4" Belt (amidships)
2½" Belt (ends)
2" Deck (amidships)
4" Conning tower

Plan revised, 1925.



Machinery: "Marine Type" Turbine. 2 screws. Boilers: 12 Schulz-Thornycroft. Designed H.P. 26,000—27.25 kts. Coal: normal 470 tons; maximum 1300 tons. Oil: 220 tons.

Armour Notes.—Belt is rather deeper than in *Taranto*.

General Notes.—Belongs to German 1912 Programme. Built by Kiel D.Y. Laid down 1912 and completed 1914. Radius of action: about 5,500 to 6,000 miles at cruising speed. Taken over by Italy, 1920, and gun positions modified.



1925 Photo, Pucci.

TARANTO (ex-German *Strassburg*, Aug., 1911).

Standard displacement, 3235 tons. Normal displacement, 4550 tons; 5100 tons full load. Complement, 445.

Length (p.p.) 440.3 feet (w.l.), 446½ feet. Beam, 43.6 feet. Mean draught, 16¾ feet.

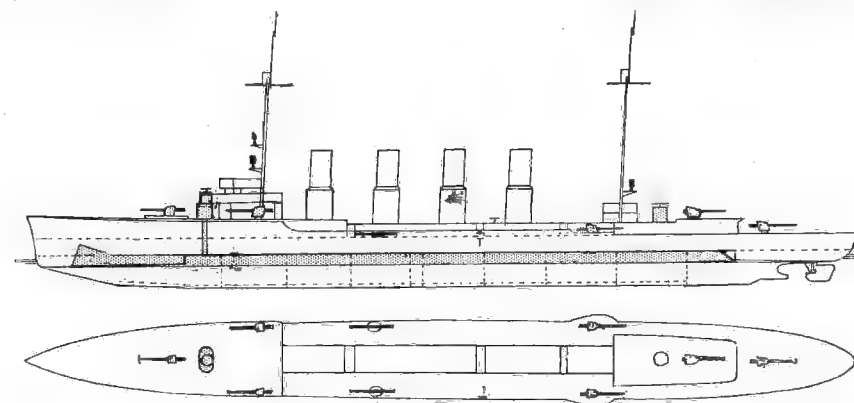
Guns (German):
7—5.9 inch, 43 cal.
4—76 mm. anti-aircraft.
3 M.G.

Torpedo tubes (19.7 inch, German):
2 above water.

Can carry 120 mines.

Armour:
2½" Belt (amidships).....
2½" Belt (ends)
2" Deck (amidships).....
4" Conning tower

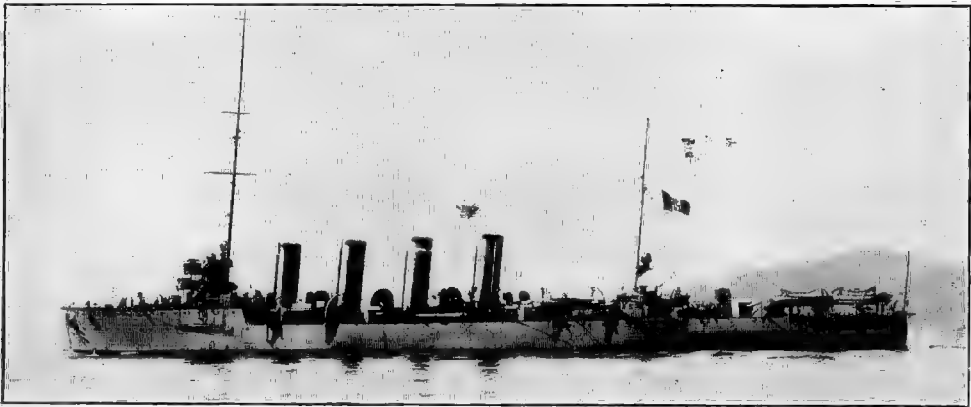
Note to plan.—Now rigged as photo.



Machinery: Parsons turbine. 2 screws. Boilers: 16 Schulz-Thornycroft. Designed H.P. 26,000—27 kts. (on trials, 25650—26.9). Coal: normal, 880 tons; maximum, 1330 tons. Oil: 130 tons.

Notes.—Laid down for German Navy at Wilhelmshaven, April, 1910; completed December, 1912. Taken over by Italy, 1920. Sister ship, *Mulhouse* (ex-*Stralsund*), now in French Navy, to which refer for any further notes, 4 boilers are oil burning. Maximum speed now 24 kts.

1911-12 EX-ENEMY CRUISERS.



VENEZIA.

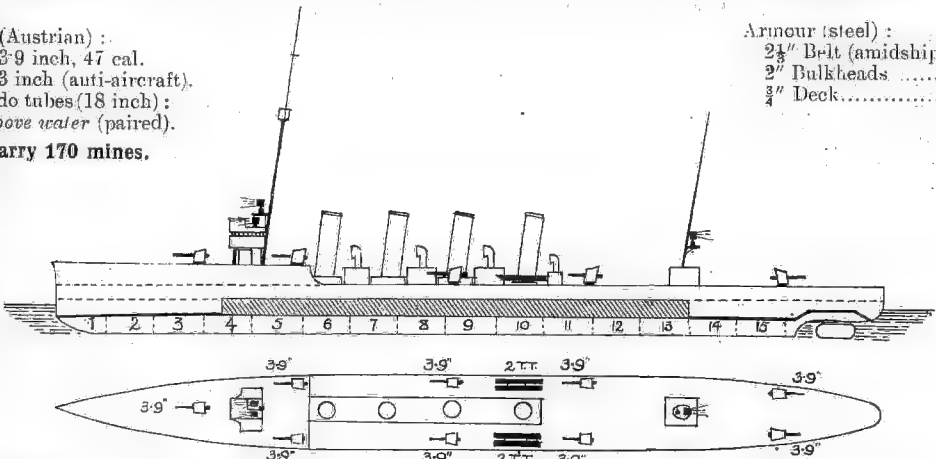
MODIFIED "ADMIRAL SPAUN" TYPE—2 SHIPS.

1927 Official Photo.

BRINDISI (ex-Austrian *Helgoland*, Nov., 1912). **VENEZIA** (ex-Austrian *Saida*, Oct., 1912).
Standard displacement, 2800 tons. Normal displacement, 3500 metric tons. Complement, 350.
Length (w.L.), 110½ feet. Beam, 42 feet. Mean draught, 15 feet. Length over all, 428½ feet.

Guns (Austrian) :
9—3·9 inch, 47 cal.
2 —3 inch (anti-aircraft).
Torpedo tubes (18 inch) :
4 above water (paired).
Can carry 170 mines.

Armour (steel) :
2½" Belt (amidships)
2" Bulkheads
3" Deck.....

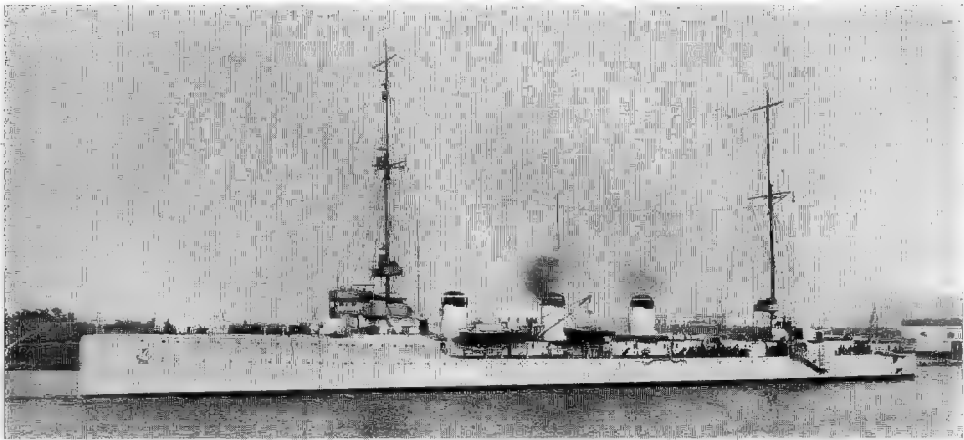


Machinery : Turbine (See Notes). 2 screws. Boilers : 16 Yarrow. Designed H.P. 25,600=27 kts.
Coal : normal, 450 tons ; maximum, 750 tons. Radius of action : 860 miles at 27 kts., 1,600 miles at 24 kts.

Name	Builder	Machinery	Laid down	Completed	Trials	Turbines	Boilers	Best recent speed
Venezia	Monfalcone	Prager Masch.	Sep. '11	May, '14	24,500=27	Melms & Pfenninger	Yarrow	
Brindisi	Fiume	Ganz-Danubins	Oct. '11	Oct., '14	25,600=27	A.E.G.	Yarrow	

General Notes.—Ex-Austrian ships, assigned to Italy, 1920. Sister ship, *Thionville* (ex-*Novara*), now in French Navy.

1909 SCOUT CRUISER (Mine Layer).



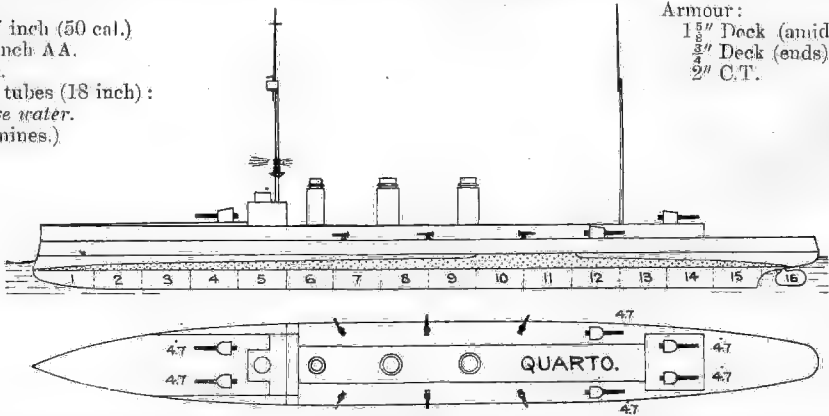
1919 Photo, Commr. Holberton, R.N.

QUARTO (Aug., 1911).

Standard displacement, 2950 tons. Normal displacement, 3412 tons. Complement, 322.
Length (p.p.), 413·4 feet. Beam, 42·1 feet. Mean draught, 13 feet. Length over all, 431½ feet.

Guns :
6—4·7 inch (50 cal.)
7—3 inch AA.
3 M.G.
Torpedo tubes (18 inch) :
4 above water.
(200 mines.)

Armour :
1½" Deck (amidships)
3" Deck (ends)
2" C.T.

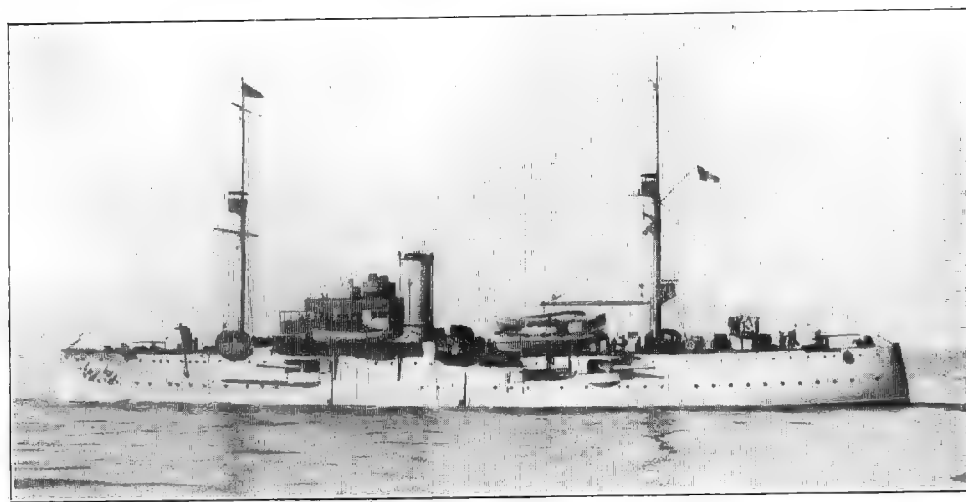


Machinery : Parsons turbine. 4 screws. Boilers : 10 Blechynden (8 oil-burning, 2 mixed firing).
Designed S.H.P. 25,000=28 kts. Fuel capacity : maximum, 50 tons coal+490 tons oil=2600 miles at 15 kts., or 1220 miles at 25·7 kts.

Name	Builder	Machinery	Laid down	Completed	H.P.	Trials kts.	Boilers	Best recent speed
Quarto	Venice Y.	Odoro	Oct. '09	Sep. '12	29,215	= 28·6	Blechynden	28

General Notes.—Carries 200 blockade mines. Designed by Engineer-Col. Truccone. Boilers renewed at Fiume, 1924.
2 similar cruisers, *Marsala* and *Nino Bixio*, have been removed from the effective list.

1913 COLONIAL CRUISER (*Cannoniera*).



1929 Official Photo.

CAMPANIA (July, 1914).

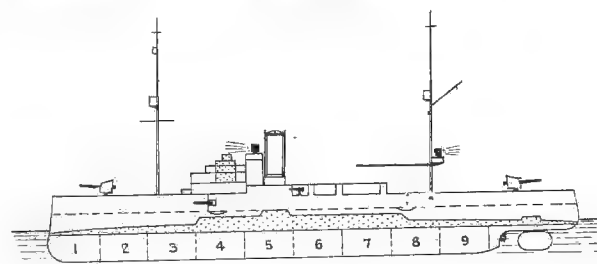
Displacement, 2530 tons (sheathed and coppered). Complement, 240.

Length (*p.p.*) 249·4 feet. Beam, 41½ feet. Max. draught, 16½ feet. Length over all, 272·3 feet.

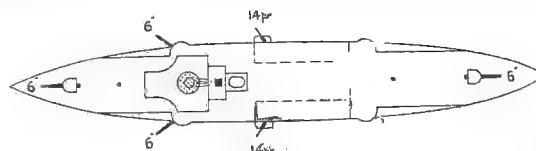
Guns:
4—6 inch, 40 cal.
2—14 pdr.
2—76 mm. AA.
2 M.G.

Armour:
1" Deck ..
2" Conning
tower.....

Ahead:
3—6 in.



Astern:
1—6 in.

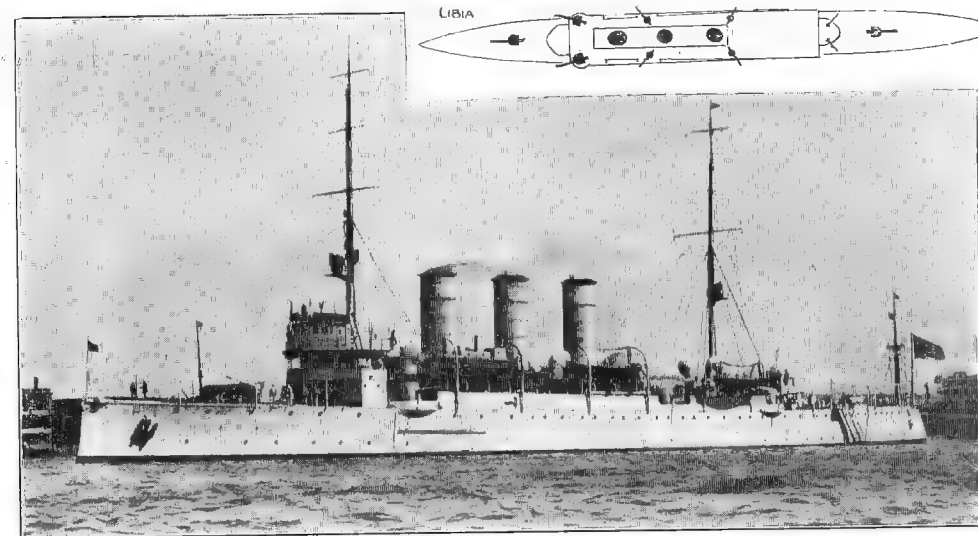


Broadside: 3—6 in.

Machinery: 2 sets vertical triple expansion. 2 screws. 4 cylindrical boilers. Designed H.P. 5000 = 16·5 kts. (*not attained on trials*). Coal: *normal* 300 tons, *full load* 470 tons = 4300 miles at 10 kts. and about 2000 miles at 15 kts.

Name	Builder	Machinery	Laid down	Completed	Trials:	Boilers	Best recent speed
<i>Campania</i>	Castellamare D.Y.	Off. Mec. Naples	Sept. '13	Aug. '16	About 5000 H.P. = 15·7 kts.	Cyl.	

General Notes.—Built for Colonial Service. Sister ship *Basilicata* sunk by boiler explosion, Port Tewfik, Suez Canal, 1912. Re-floated 1920, but not considered worth repair.

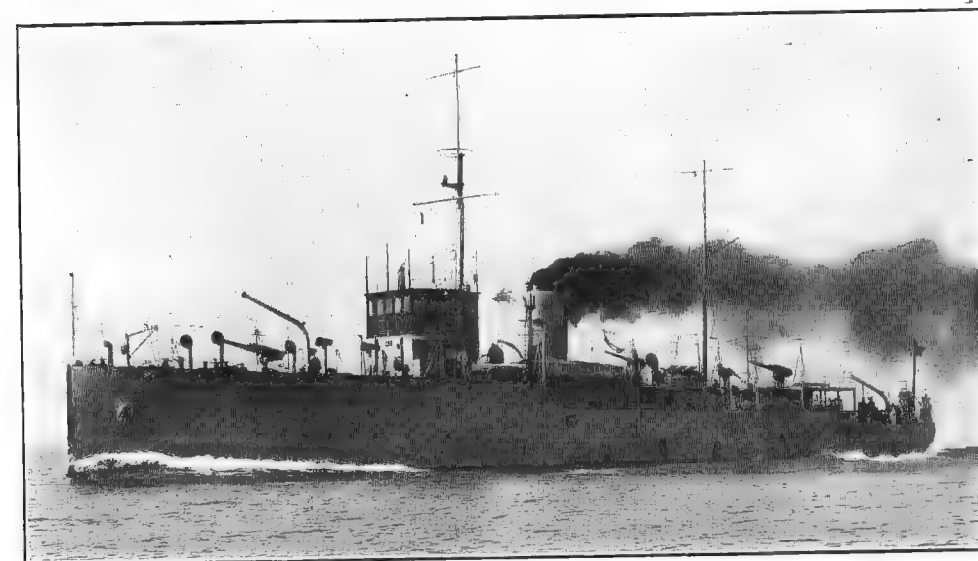


1929 Official Photo.

LIBIA (ex Turkish *Drama*, Nov., 1912). 4445 tons. Complement, 331. Dimensions: 340 (*o.a.*) × 47½ × 16 feet. Armament: 8—4·7 inch, 50 cal., 3—76 m.m. A.A., 2 M.G., 2—18 inch tubes (*above water*). Deck, 4". Designed H.P. 12,500 = 22 kts. 16 Niclausse boilers. Coal: *normal* 275 tons, *maximum* 675 tons. Endurance: 4500 miles at 10 kts. Built and engined by Ansaldo. Was begun by Ansaldo for Turkish Navy in 1911 and appropriated by Italy on outbreak of Turko-Italian War. Not completed until 1913. Rearmed for foreign service in 1924. Trials: H.P. 11,500 = 22·9 kts.

Minelayers. (*Navi Posamine*.)

Note.—Cruisers *Bari*, *Ancona*, *Taranto*, *Brindisi*, *Venezia*, *Quarto*; all Flotilla Leaders and many Destroyers and Submarines are fitted for minelaying.



MILAZZO.

(For description see next page.)

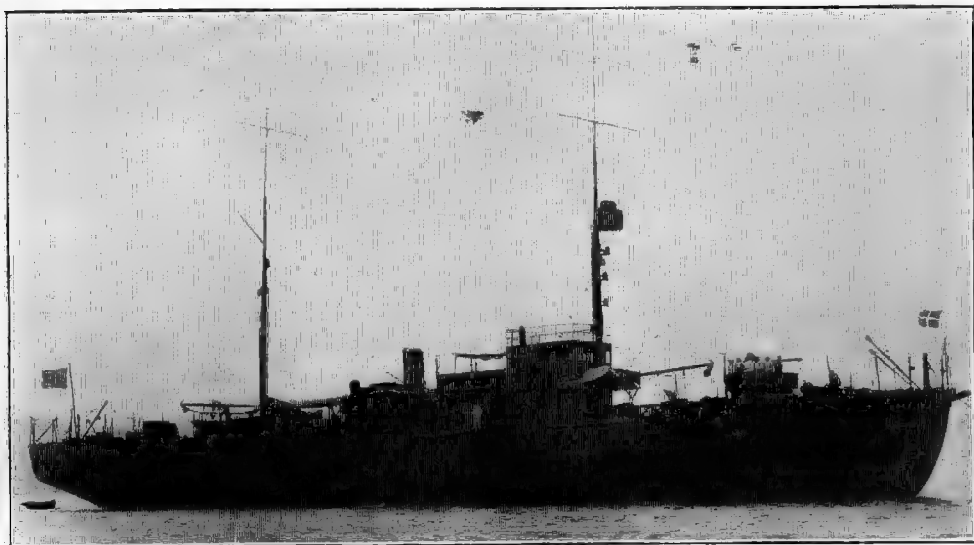
1928 Photo by courtesy of Builders.

ITALY—Minelayers and Mine Sweepers.

MINELAYERS AND MINE SWEEPERS.

Minelayers—continued.

6 *Ostia* type: **AZIO** (May 4th, 1927), **LEGNANO** (May, 1926), **LEPANTO** (May 22nd, 1927), **DARDANELLI** (1925), **MILAZZO** (1925), **OSTIA** (1925). All ordered 1924, the first three from Cant. Nav. Riuniti, Ancona, the second three from Cant. Nav. Triestino, Monfalcone. Displacement, 700 tons (*full load*, 850 tons). Dimensions: $204 \times 28\frac{1}{2} \times 8\frac{1}{2}$ feet. H.P. 1,500 = 15 kts. Oil fuel. Guns: 2—4 inch, 35 cal., 1—3 inch AA. First three are to be employed on colonial service, and have an effective radius of 3500 miles. All fitted for sweeping if required. 200 mines carried.



BUCCARI.

1928 Photo, Pucci.

4 *Fasana* type: **BUCCARI** (1926), **DURAZZO** (1st April, 1926), **FASANA** (1924), **PELAGOSA** (1926). All built at Castellamare. 610 tons. Dimensions: $192 (p.p.) \times 32 \times 5.7$ feet. Engines: 2 sets Diesel engines, together 700 B.H.P. = 10 kts. Guns: 1—3 inch AA. Carry 200 mines.

ALBONA, **LAURANA**, **ROVIGNO** (ex-Austrian Minesweepers *M.T.* 130—132). 130 tons. Guns: 1—3 inch. H.P. 280 = 11 kts.

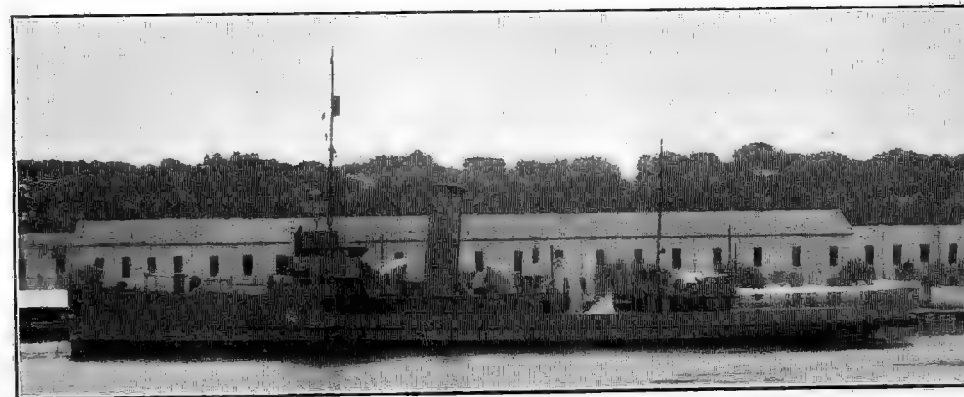


BRONDOLO.

1920 Official Photo.

BRONDOLO (1909), **MARGHERA** (1909). 120 tons. Dimensions: $125 \times 11 \times 2\frac{1}{4}$ feet. Guns: 1—14 pdr. During War, each fitted to carry and lay 60 mines. Designed H.P., 540 = 13 kts. Coal: 14 tons. Complement, 27.

Mine Sweepers (*Navi Dragamine*).



VIESTI.

1926 Photo, by courtesy of Ministry of Marine.

COTRONE (ex-*Abastro*, ex-German *M* 120), **VIESTI** (ex-*Meteo*, ex-German *M* 119.) Built at Neptun Yard, Rostock, 1918, and taken over by Italy in 1919. Displacement: 515 tons. Dimensions: $182 (w.l.) \times 192 (o.a.) \times 23\frac{1}{2} \times 7$ feet. I.H.P. 1600 = 16 kts. Guns: 2—4 inch.



RD 31.

1928 Photo, Pucci.

39 small tugs, of about 200 tons, bearing various numbers, RD 4 to 57, are also fitted for mine sweeping. Majority are H.P. 800 = 13 kts. All armed with 1—3 inch AA.

FLOTILLA LEADERS.

Flotilla Leaders—ITALY

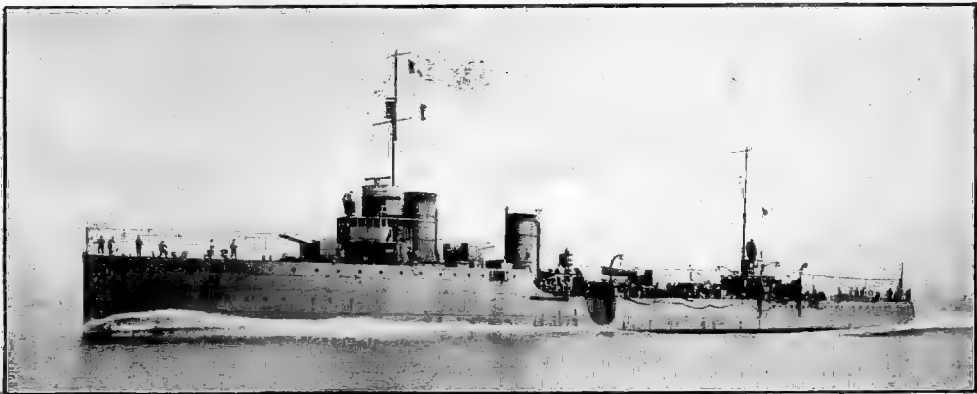
Summary.	† Building.	* Completed.
112* + 20 † Torpedo Craft.		
FLOTILLA LEADERS (Esploratori Leggeri)	—	4
DESTROYERS (Cacciatorpediniere)	20	68
TORPEDO BOATS (Torpediniere)	—	40

Flotilla Leaders.*

*Note.—There is no official Italian rating corresponding to this. All the large T.B.D. on this page, of over 2000 metric tons are officially rated as *Esploratori* (Scouts) with Cruisers of *Brindisi* and *Quarto* types.

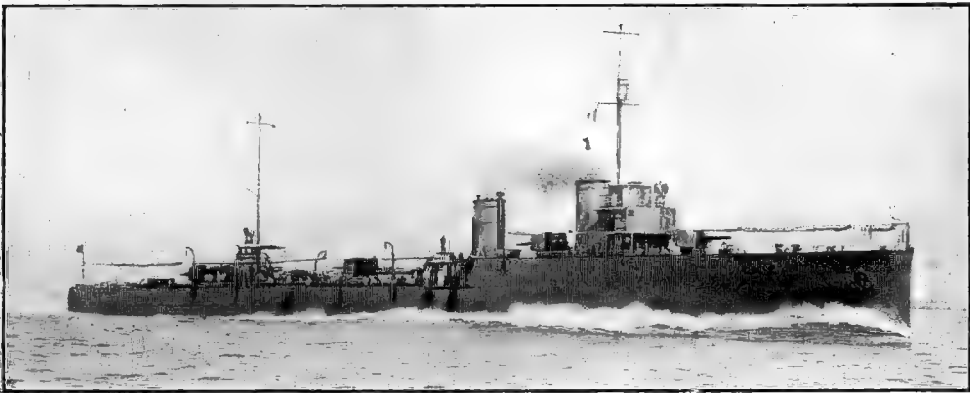
3 Leone Class.

Funnel bands: *Pantera* none; *Leone*, 1 white on fore funnel; *Tigre*, 1 white on after funnel.



LEONE. (*Pantera* has S.L. on platform, low on foremast.)

1925 Photo, by favour of Messrs. Ansaldo.



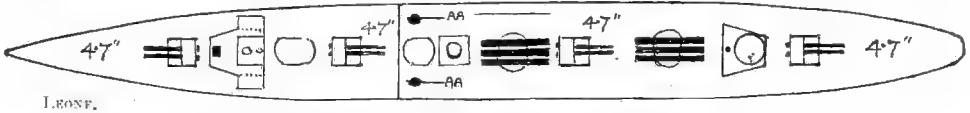
TIGRE.

1925 Photo, by favour of Messrs. Ansaldo.

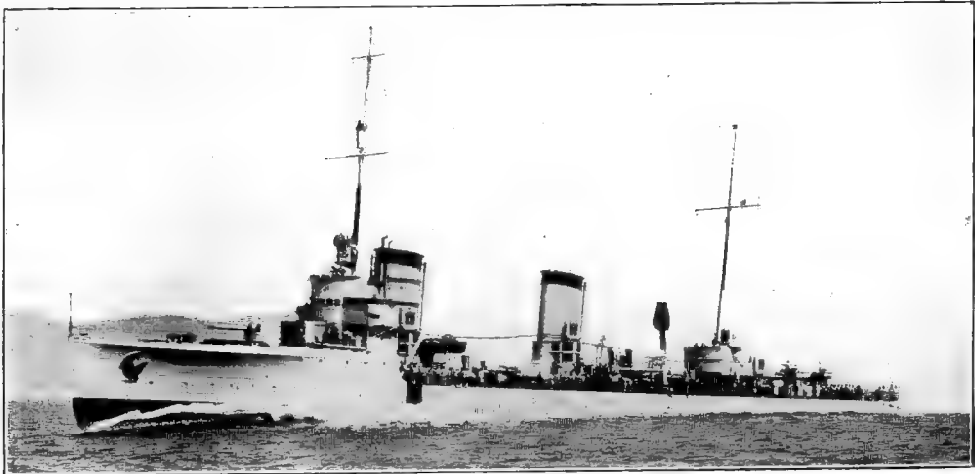
Flotilla Leaders—continued.

3* *Ansaldo* type: **Leone, Pantera, Tigre** (1923). 1985 tons (*normal*), 2283 tons (*full load*). Dimensions: 372 (o.a.), 350½ (p.p.) × 34 × 11.5 feet (*mean*). Guns: 8—4.7 inch (45 cal.), 2—14 pdr. (40 cal.) A.A., 2—2 pdr. A.A. Tubes: 6—18 inch, in two triple deck mountings. Designed S.H.P. 42,000 = 34 kts. (Trials, 50,000 = 35 kts.). Best recent speeds, 33 kts. or less. 4 Parsons turbines (geared). 4 Yarrow oil-burning boilers. 2 screws. Oil fuel: 200 tons *normal*, 400 tons *max.* Carry 60 mines (*normal* stowage), or 100 (*maximum*).
**Leopardo* and *Lince* cancelled.

Notes.—Internally these ships are most elaborately fitted. Each is equipped with a different system of fire-control—British, Italian and German respectively. 4.7 inch guns are paired very closely—only 1 foot apart. *Max.* elevation: 30°. Special apparatus for smoke screen production is fitted on starboard quarter of each. The distinctive appearance conferred by the upright funnels, of unequal height, and straight stem is a noteworthy feature of these vessels.



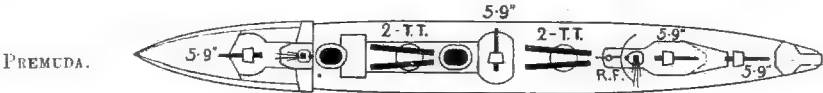
1 Ex-German Boat ("1916 Design.")



1924 Official Photo.

1 *Vulkan* boat: **Premuda** (ex-German F 116, built 1916-18). Displacement: 2435 tons. Dimensions: 334.6 (p.p.) 360 (o.a.) × 36½ × 12.8 feet (*mean*). Guns: 4—5.9 inch (42 cal. "Flak"), 3—40 m/m. A.A., 2 M.G. Tubes: 4—19.7 inch, in 2 twin deck mountings. Machinery: A. E. G. Vulkan turbines. Boilers: 4 "Marinetype" (Schulz-Thornycroft). Trials: H.P. 53,975 = 33.7 kts. 2 screws. Oil fuel: 280 tons *normal*, 720 tons *max.* Complement, 154. Carries 40 mines.

Notes.—German "1916 Design" boat, taken over by Italy, 1920. For other remarks, refer to *Amiral Sérés* (sister boat), in French Navy Section.



Destroyers (*Cacciatorpediniere*) (under 2000 tons).

8 Dardo class (ordered 1928 and 1929.)

Building.

2 Odero boats: *DARDO*, *STRALE*.) Displacement 1350 tons *normal*, 1450 tons *deep load*. Dimensions: 303 × 30½ × 11 feet. 2 sets Parsons geared turbines and Thornycroft oil fired boilers. I.H.P. 44,000 = 38 kts. Guns: 4—4.7 inch, 3—40 m/m A.A. Tubes: 6—21 inch in triple deck mountings. Of similar type to *Turbine* class in other respects.

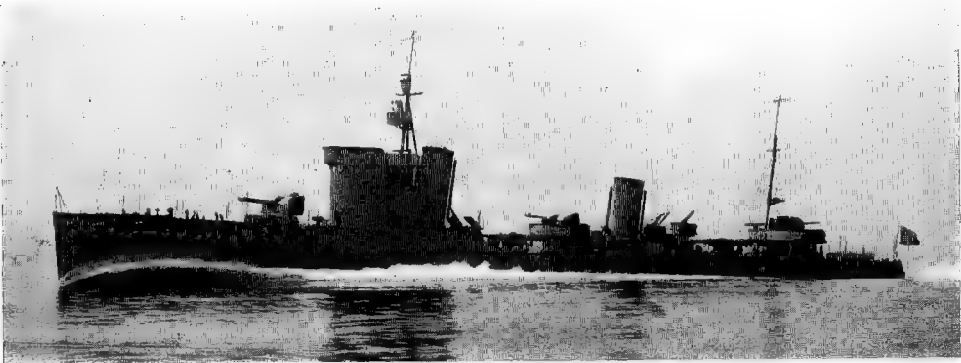
2 *Tirreno* boats: *FRECCIA*, *SAETTA*.)

2 *Quarnaro* boats: } Names not reported.

2 (yard not advised): }

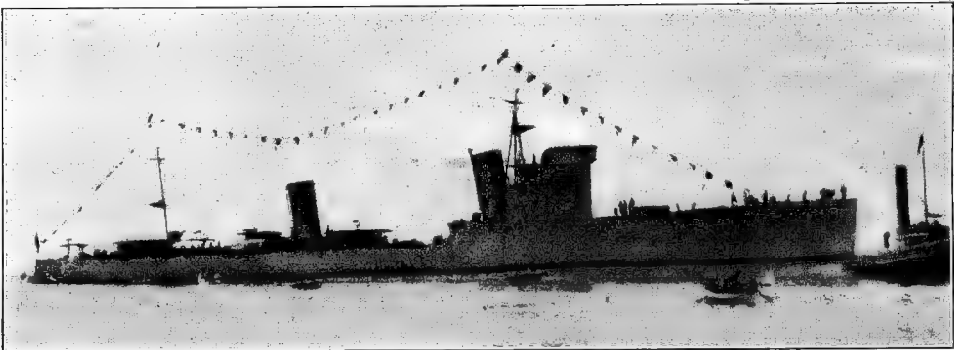
12 “Navigatori” class (ordered 1926.)

(Improved *Mirabello* Type).



U. VIVALDI.

1929 Photo.



L. TARIGO.

1929 Photo, by courtesy of Messrs. Ansaldo.

2 *Ansaldo* boats: *Luca Tarigo* (Dec. 9th, 1928), *Lanzerotto Malocello* (March 14th, 1929).

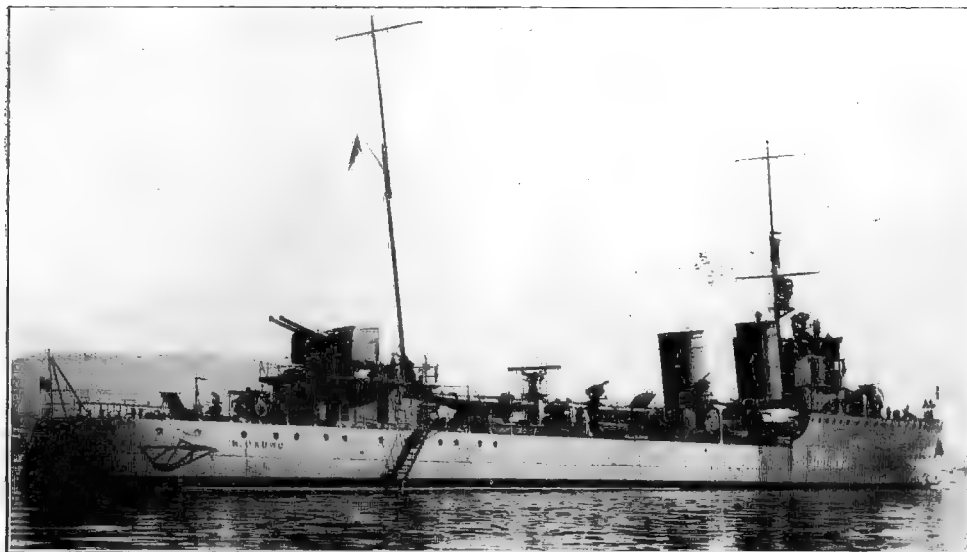
2 *Odero* boats: *Ugolino Vivaldi* (Jan. 9th, 1929), *Antoniotto Usodimare* (May 12th, 1929).

2 *Tirreno* (Riva Trigoso) boats: *Leone Pancalao* (Feb. 6th, 1929), *Antonio da Noli* (May 21st, 1929).

2 *Riuniti* (Ancona) boats: *EMANUELE PESSAGNO*, *NICOLOSO DA RECCO*.

4 *Quarnaro* boats: *Nicolo Zeno* (Aug. 11, 1928), *GIOVANNI DA VERAZZANO*, *Alvise Cadamosto* (July 1st, 1929), *ANTONIO PIGAFETTA*.

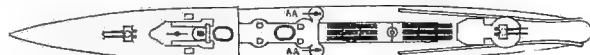
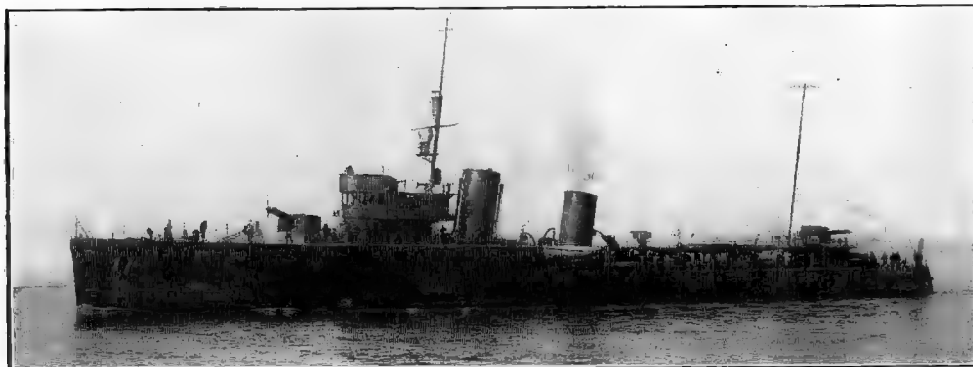
Displacement: 1908 tons, *normal*; 2010 tons *deep load*. Dimensions: 352 (o.a.) 351 (p.p.) × 33½ × 16½ feet. I.H.P. 50,000 = 38 kts. Guns: 6—4.7 inch, 3—40 m/m. A.A. Tubes: 6—21 inch, in triple deck mountings. Mines to be carried.

4 **Sauro class.** (Minelayers.)

N. SAURO.

1927 Official Photo.

2 Odero boats: **Cesare Battisti** (11th Dec., 1926), **Nazario Sauro** (12th May, 1926).
 2 Quarnaro boats: **Daniele Manin** (24th June, 1925), **Francesco Nullo** (Oct., 1925). All designed by Odero and laid down 1924. Displacement: 1300 tons. Dimensions: $205\frac{1}{2} \times 30\frac{1}{2} \times 10\frac{1}{2}$ feet. Parsons geared turbines. 3 Thornycroft oil-fired boilers, with superheaters. S.H.P. 32,000 = 35 kts. (On trials, *N. Sauro* 37,000 = 36.5, *D. Manin* 36.8). Guns: 4—4.7 inch, 3—40 m/m. A.A., 4 M.G. Tubes: 6—21 inch, in triple deck mountings. 30 mines carried.

Deck plan, *Sauro* and *Turbine* classes.8 **Turbine class.**

ESPERO.

1928 Photo, by courtesy of Messrs. Ansaldo.

4 Ansaldo boats: **Borea** (Jan., 1927), **Espero** (Aug. 31st, 1927), **Ostro** (Jan. 2nd, 1928), **Zeffiro** (27th May, 1927).
 2 Odero boats: **Aquilione** (Aug. 3rd, 1927), **Turbine** (21st April, 1927). 2 boats by Cant. del Tirreno, Riva Trigoso: **Euro** (July 7th, 1927), **Nembo** (27th Jan., 1927).
 All ordered or laid down 1924-25. Displacement: 1225 tons *normal*, 1355 tons *full load*. Dimensions: $299\frac{1}{2}$ (p.p.), $307\frac{1}{2}$ (o.a.) $\times 30\frac{1}{2} \times 10\frac{1}{2}$ feet. Geared turbines. 3 Thornycroft boilers, with superheaters. S.H.P. 35,000 = 36 kts. *Turbine*, 4 hours = 38.9. Best mile run = 39.6. Guns: 4—4.7 inch, 2—40 m/m. A.A., 2 M.G. Tubes: 6—21 inch, in triple deck mountings.

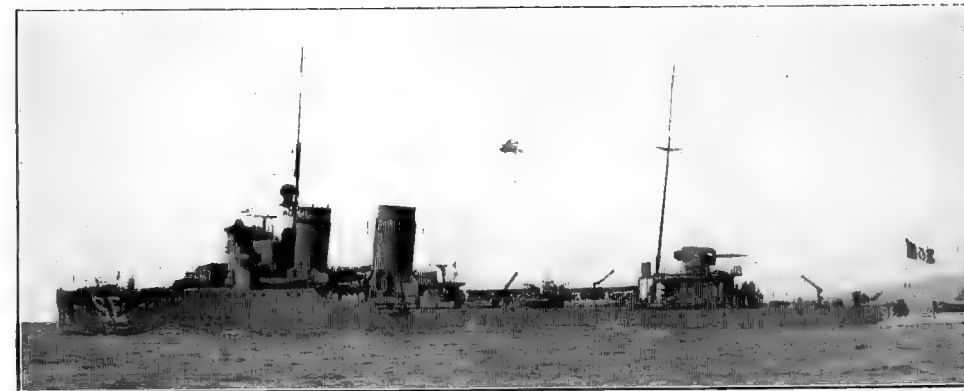
4 **Sella class** ("Improved Palestro design").

(All fitted as Minelayers).



G. NICOTERA.

1928 Photo, Pucci.



Q. SELLA.

1926 Photo, by courtesy of Ministry of Marine.

4 Pattison type: **Francesco Crispi** (Oct., 1925), **Giovanni Nicotera** (24th June, 1926), **Bettino Ricasoli** (29th Jan., 1926), **Quintino Sella** (25th April, 1925). All laid down 1922-23. 1150 tons. Dimensions: $270\frac{1}{2} \times 27 \times 9\frac{1}{2}$ feet. Guns: 3—4.7 inch (45 cal.), 2—40 m/m. A.A., 2 M.G. Torpedo tubes: 4—21 inch in two pairs. Machinery: Turbines (Belluzzo in *Crispi*, Parsons in others). 28,000 S.H.P. = 35 kts. (Trial speeds have been from 35.9 to 38 kts.) 3 Thornycroft boilers. Oil fuel: 200 tons *normal*, 255 tons *max.* Radius: 2750 miles at 15 kts. Complement, 120.

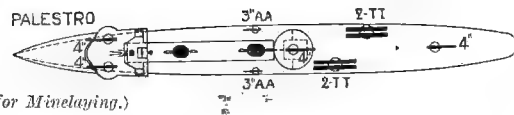
Note.—On trials *B. Ricasoli* is reported to have exceeded 38 kts. with H.P. 40,000: *F. Crispi* 38.7; *Q. Sella* 37.6. Average figures: *B. Ricasoli*, 35 kts. ($8\frac{1}{2}$ tons consumption); *F. Crispi*, 34 kts. (9½ tons); *Q. Sella*, 35 kts. (8 tons); *G. Nicotera*, 34.5 kts. (9 tons).

ITALY—Destroyers.

DESTROYERS (continued).

8 Palestro/Curtatone class.

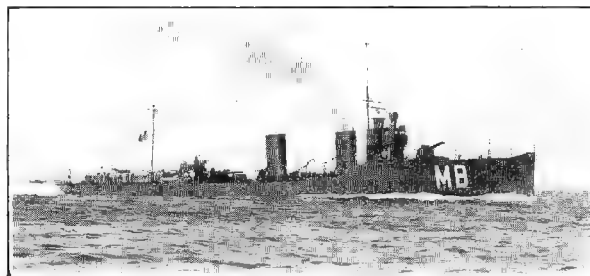
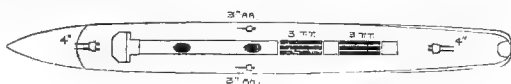
(All fitted for Minelaying.)



SAN MARTINO.

Photo added 1925.

8 ORLANDO TYPE, viz.:—
4 Palestro class: **Confienza** (1920), **Palestro** (1919), **San Martino** (1920), **Solferino** (1920). 875 tons (1076 full load). Dimensions: $256\frac{1}{2}$ (p.p.) \times $24\frac{1}{2}$ \times $8\frac{1}{2}$ feet (mean). Guns: 4—4 inch, 45 cal., 2—3 inch, 40 cal. AA., 2 M.G. Tubes: 4—18 inch in twin deck mountings. 10 mines carried. 2 Zoelly turbines. Designed S.H.P. 18,000 = 32 kts. Trials: 22,000 = 31.1 to 32.4 kts. (Best recent speed, about 29 kts.). 4 Thornycroft boilers. 2 screws. Oil: 170 tons. Complement, 105.

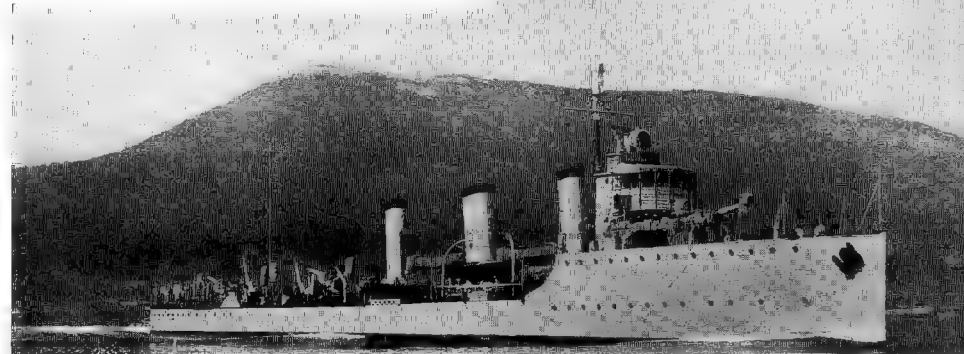


MONZAMBANO.

1924 Photo, by courtesy of Elli Orlando.

4 Curtatone class: **Calatafimi** (17th March, 1923), **Castelfidardo** (1923), **Curtatone** (1922), **Monzambano** (6th August, 1923). 980 tons (1190 full load). Length (p.p.) $262\frac{1}{2}$ feet. Designed S.H.P. 18,000 = 32 kts. Trials: H.P. 27,500 = 34 kts. Other details as Palestro class, but 4 inch guns are in pairs, 2—40 m/m. AA. are carried, and there are 6—18 inch tubes in triple deck mountings, as plan above.

6 "Generali" class.



GENERALE ANTONIO CANTORE. (Fore funnel now raised).

1922 Photo.

6 Odera type: **Generale Achille Papa** (1921), **Generale Antonio Cantore** (April, 1921), **Generale Antonino Cascino** (1922), **Generale Antonio Chinotto** (1921), **Generale Carlo Montanari** (1922), **Generale Marcello Prestinari** (1922). Displacement: 813 tons. Dimensions: $237.9 \times 23.9 \times 9$ feet. Guns: 3—4 inch, 45 cal., 2—3 inch AA., 2 M.G. Tubes: 4—18 inch in two twin deck mountings. Tosi Turbines. S.H.P. 17,000 = 33 kts. (about 30 kts. best speed now). 4 Thornycroft boilers. Oil: 150 tons. Complement, 105. Radius: 2200 miles at 14 kts.; 600 miles at 33 kts.

7 Cosenz class. (Minelayers)

Deck Plan of COSENZ class
(Generale class similar,
but only 1—4 inch on
forecastle).



E. COSENZ.

1925 Photo, Pucci.

7 Odera type: **Enrico Cosenz** (ex Agostino Bertani), **Giacomo Medici**, **Giuseppe la Farina**, and **Nicola Fabrizi** (all 1917); **Angelo Bassini**, **Giacinto Carini**, **Giuseppe la Masa**, (all 1916). 645 tons (810 full load). Dimensions: 238 (p.p.) \times 24×9.2 feet (mean). Guns: 4—4 inch, 2—14 pdr., 2 M.G. Tubes (in all): 4—18 inch, in two twin-deck mountings. 10 mines carried. S.H.P. 17,000 = 33 kts. (On trials made 34.1 kts. Now good for about 30 kts.) Fuel: 150 tons. Complement, 100. 2 Tosi turbines. 4 Thornycroft oil-burning boilers. 2 screws. Endurance: 1700 miles (15 kts.), 470 miles (full speed). **Benedetto Cairoli**, of this class, lost during War.

2 Aquila class. Mine Layers, carrying 50 mines each.

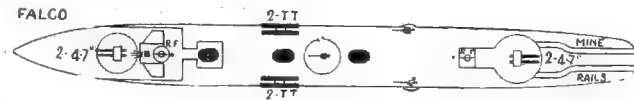
AQUILA. (4.7 inch amidships gun no longer carried.)

1925 Photo, Pucci.

2 *Pallison* type: **Falco** (1919), **Aquila** (1916). 1556 tons *normal*, 1733 tons *deep load*. Dimensions: 308.5 (p.p.) \times 30'8" \times 10.7 feet (*mean*). Guns: 4—4.7 inch, 40 cal.; 4—14 pdr., 40 cal. AA.; 2 M.G. Tubes: 4—18 inch, in two twin deck mountings. Designed S.H.P. 39,800 = 36.5 kts. 2 Tosi turbines. 5 Thornycroft oil-burning boilers. 2 screws. Endurance: 1700 miles (15 kts.), 380 miles (full speed). Oil: 120 *normal*, 260 tons *max*. Complement, 150.

Note.—These two destroyers were to have been built for the Rumanian Navy. Appropriated for Italian Navy on outbreak of war with Austria-Hungary. Two boats, *Nibbio*, *Sparviero*, sold back to Rumania, 1920.

*Are Mine Layers, carrying 50 mines each.

**4 Sirtori class.** (Minelayers).

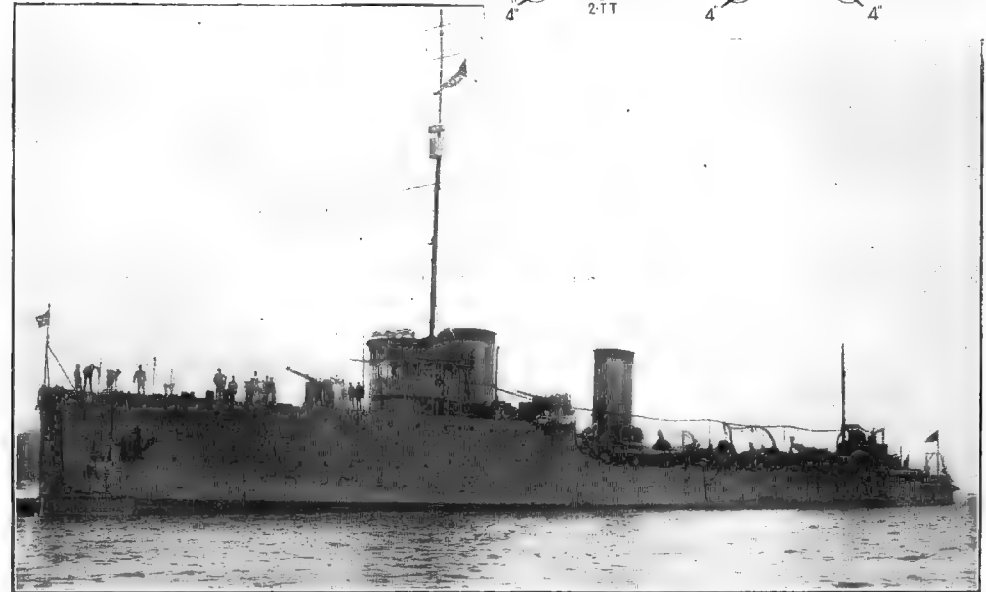
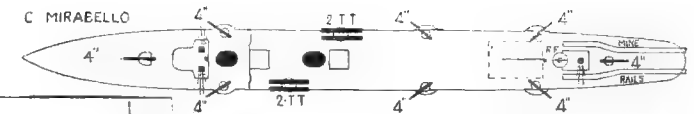
V. ORSINI.

1919 Photo, Commr. Holberton, R.N.

4 *Odero* type: **Giuseppe Sirtori**, **Francesco Stocco**, **Giovanni Acerbi**, **Vicenzo Orsini** (all 1916). Displacement: 850 tons. Dimensions: 238 (p.p.) \times 24 \times 9.2 feet (*mean*). Guns: 6—4 inch, 35 cal., 2—40 m/m. AA. Tubes: 4—18 inch, in twin mountings. 2 Tosi turbines. S.H.P. 17,000 = 32 kts. 4 Thornycroft oil-burning boilers 2 screws. Radius: 1700 miles at 15 kts., 470 miles at 33 kts. Fuel: 150 tons. Complement, 100. Carry 10 mines.

2 Mirabello class.

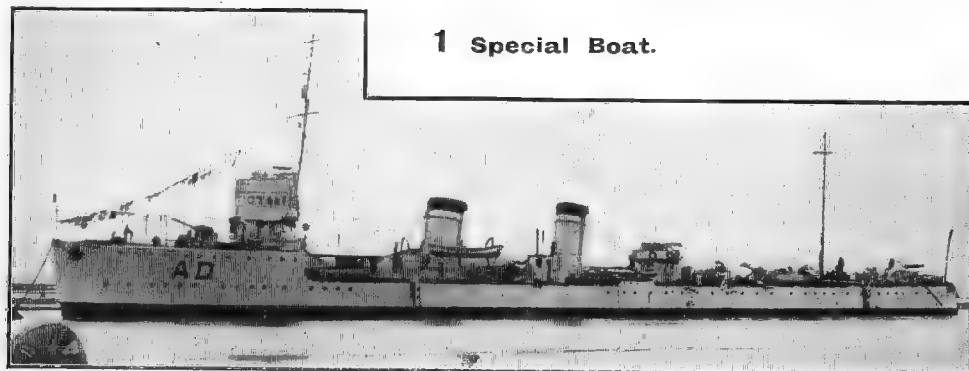
Mine Layers, each carrying 100 mines.



1926 Photo, Captain M. Mille, R.S.N.

2 *Ansaldo* type: **Carlo Mirabello** (1914), **Augusto Riboty** (1915). 1521 tons *normal*, 1785 tons *deep load*. Dimensions: 331.4 (p.p.) \times 32 \times 10.6 feet (*mean*). Guns: 8—4 inch, 2—40 m/m AA. Tubes: 4—18 inch in twin deck mountings. Designed S.H.P. 35,000 = 35 kts. Made 33.75 and 35.03 kts. on trials respectively. 4 Yarrow oil-burning boilers. 2 Parsons geared turbines. 2 screws. Oil fuel: *normal* 200 tons, *maximum* 350 tons. Endurance: 2840 miles (15 kts.), 500 miles (full speed). C. A. *Racchia* mined off Odessa, 21st July, 1920.

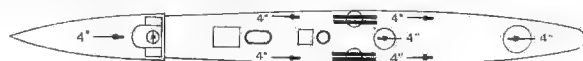
1 Special Boat.



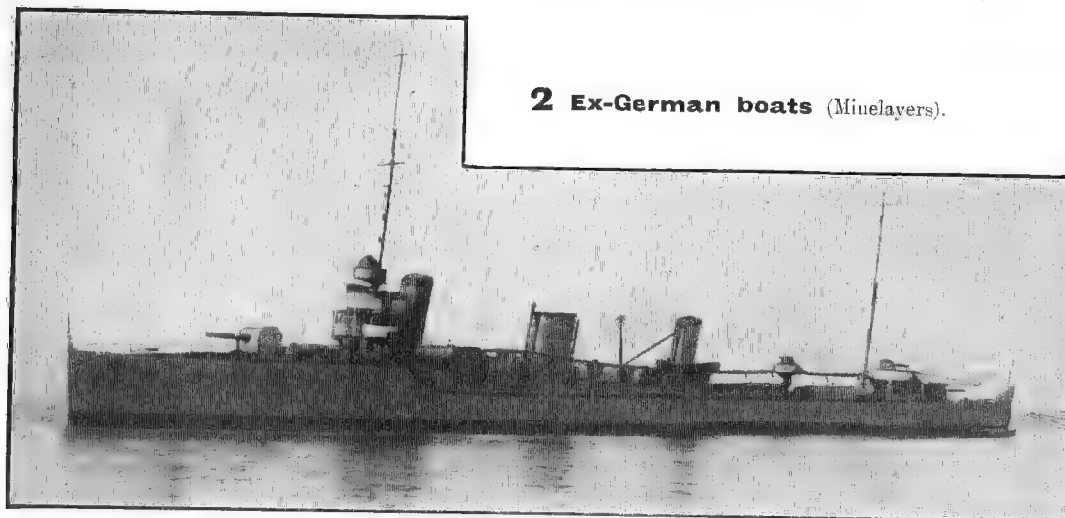
AUDACE.

1925 Photo, Bassan.

1 *Yarrow* type: **Audace** (ex-Japanese *Kawakaze*, Scotstoun, Glasgow, 1915). 922 tons (over 1000 tons full load). Dimensions: 275 (p.p.), 283 (o.a.) \times 27 $\frac{1}{2}$ \times 9 $\frac{1}{2}$ feet (max.). Guns: 7—4 inch, 2—2 pdr. A.A. Tubes: 4—18 inch, in two twin mountings. Fuel: 252 tons. 2-shaft Brown-Curtis turbines and 3 *Yarrow* large-tube, oil-burning boilers. Endurance: 2180 miles (15 kts.), 560 miles (full speed). S.H.P. 22,000 = 30 kts. Complement, 113. Note.—This boat must not be confused with *Audace* built in 1912-13 by Orlando, as a sister boat to *Animoso* (v. next page). The Orlando *Audace* was sunk during the War, and the Japanese *Kawakaze* (closely resembling the lost *Audace*) was purchased by Italy and re-named *Audace*.



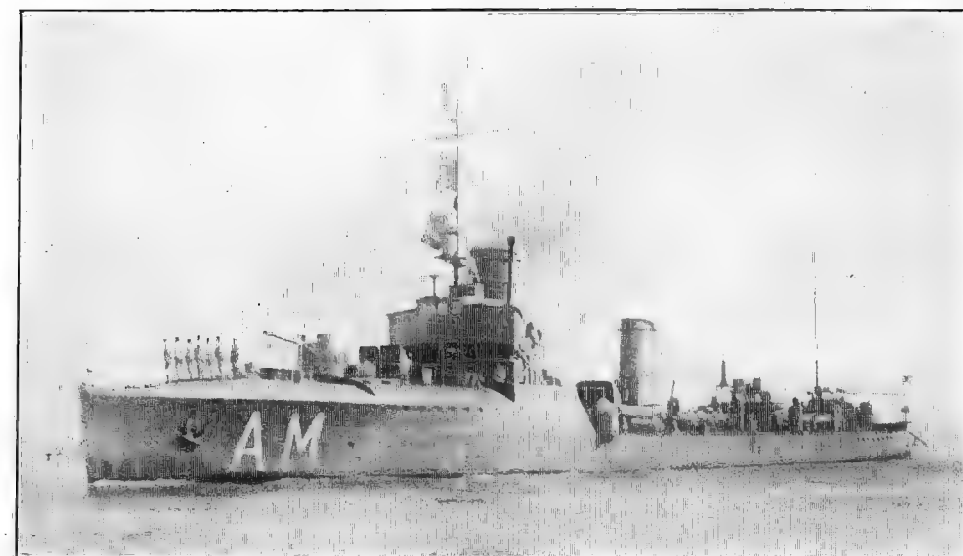
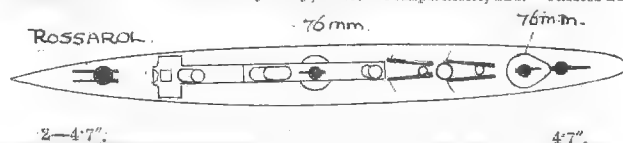
2 Ex-German boats (Minelayers).



C. ROSSAROL.

1925 Photo, Bassan.

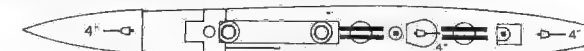
1 *Blohm & Voss* boat: **Cesare Rossarol** (ex-German *B 97*, 1914). 1316 tons (deep load). Dimensions: 321.5 \times 30 $\frac{1}{2}$ \times 9.4 feet. Guns and tubes: 3—4.7 inch, 2—3 inch A.A., 2—40 m/m. A.A., 4—19.7 inch tubes, in 2 twin deck mounts. Turbines and Schulz-Thornycroft boilers. Designed S.H.P. 40,000 = 34 kts. (Made 36 kts, on trials and is reported to have reached this speed under normal conditions in 1926). Oil: 150 tons normal, 520 tons maximum = 2620 miles at 20 kts. Taken over by Italy, 1920. Complement, 114. Carries 24 mines.



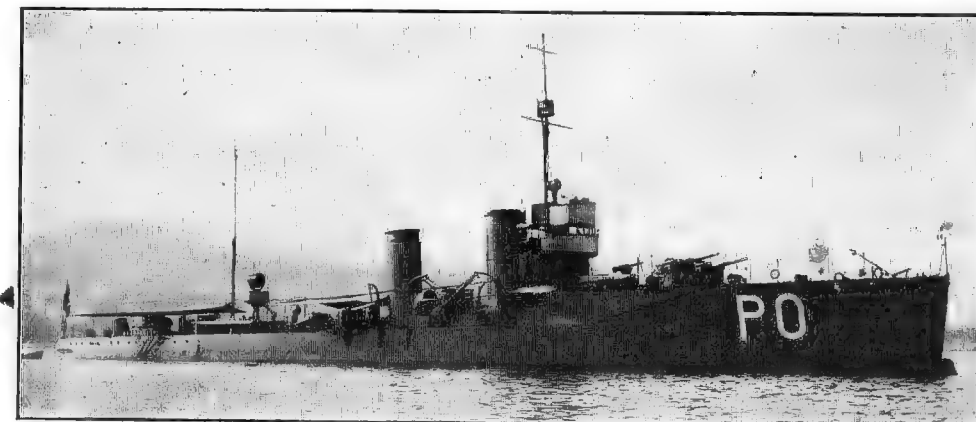
1929 Photo, Capt. M. Mille, R. Sp. N.

1 *Schichau* boat: **Ardimentoso** (ex-German *SG 3*, 1915). 816 tons (1050 deep load). Dimensions: 273.4 \times 27 $\frac{1}{2}$ \times 9.2 feet. Guns* and tubes: 3—4 inch, 2—40 m/m. A.A.; 4—19.7 inch tubes, in two twin mountings. Schichau turbines and *Yarrow* boilers. S.H.P. 24,000 = 33 kts. Oil: 162 tons normal, 280 tons max. = 1960 miles at 20 kts. Taken over by Italy, 1920. Complement, 85.

*Re-armed with Italian guns. Was fitted to carry 24 mines when first completed.



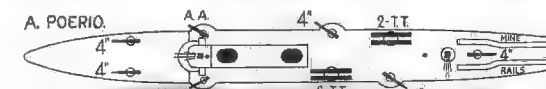
2 Poerio class (Minelayers).



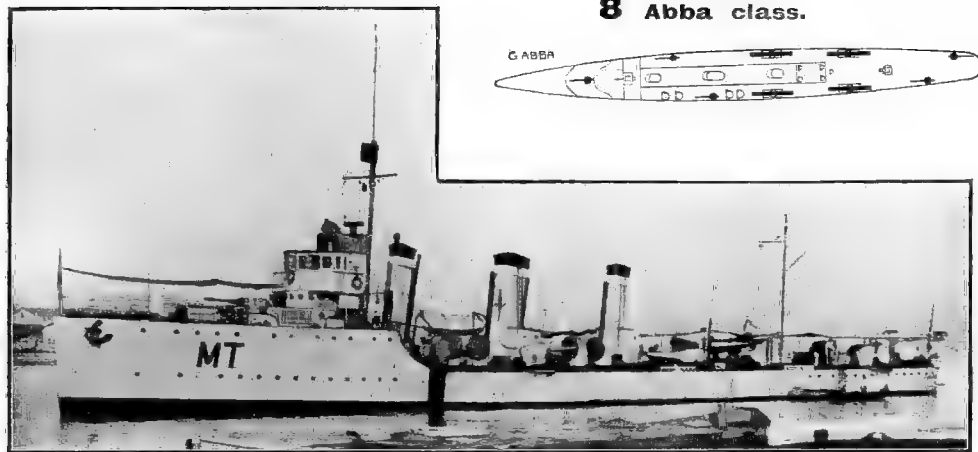
A. POERIO.

1925 Photo, Pucci.

2 *Ansaldo* type: **Alessandro Poerio** (1914), **Guglielmo Pepe** (1914). 911 tons (1028 deep load). Dimensions: 272.6 (p.p.) \times 26.3 \times 9.3 feet. Armament: 5—4 inch, 2—40 m/m. A.A. 4—18 inch torpedo tubes in two twin-deck mountings. H.P. 22,500 = 32 kts. 3 *Yarrow* oil-burning 2-shaft boilers, Parsons turbines. Oil: 200 tons. Endurance: 2930 miles (15 kts.), 745 miles (full speed). Trials: 33.4 kts. Fitted as Minelayers. Complement, 137.



8 Abba class.

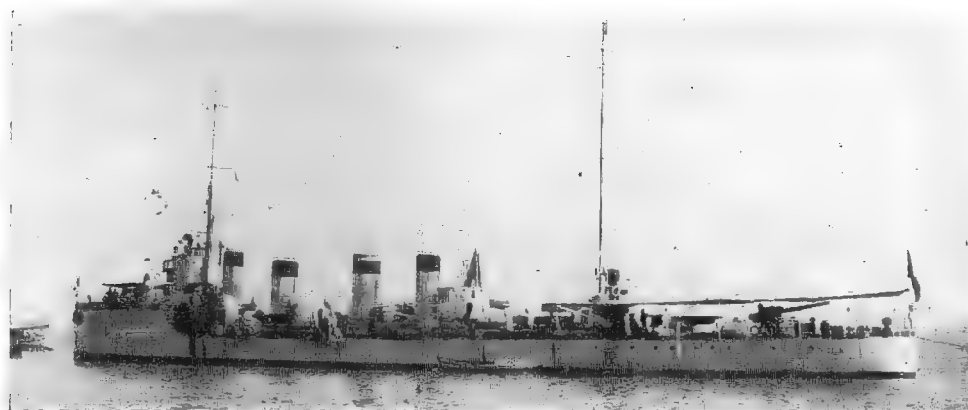
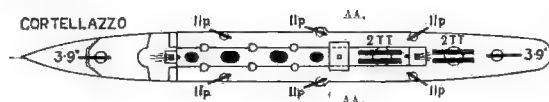


ANTONIO MOSTO.

1925 Photo, Bassan.

2 *Pattison* boats: **Fratelli Cairoli**, (Ex-Francesco Nullo), **Antonio Mosto**, (both 1914).
 6 *Odero* boats: **Rosolino Pilo**, **Giuseppe Abba**, **Ippolito Nievo**, **Simone Schiaffino**,
Giuseppe Dezza (Ex-Pilade Bronzetti), (all 1914), 795 tons. Dimensions: 236.2
 (p.p.) × 24 × 8.8 feet (mean). Guns: 5—4 inch, 2—2 pdr. AA. Tubes: 4 single 18 inch. Made about 31.8 kts. on
 trials. 2 Tosi turbines and 4 Thornycroft oil-burning boilers. 2 screws. Endurance: 1700 miles (15 kts.). 440
 miles (full speed). S.H.P. 17,000 = 32 to 33.8 kts. except 2 *Pattison* boats, S.H.P. 14,500 = 30.8 kts. Fuel:
 150 tons. Complement, 94.

4 Cortellazzo class (ex-Austrian).

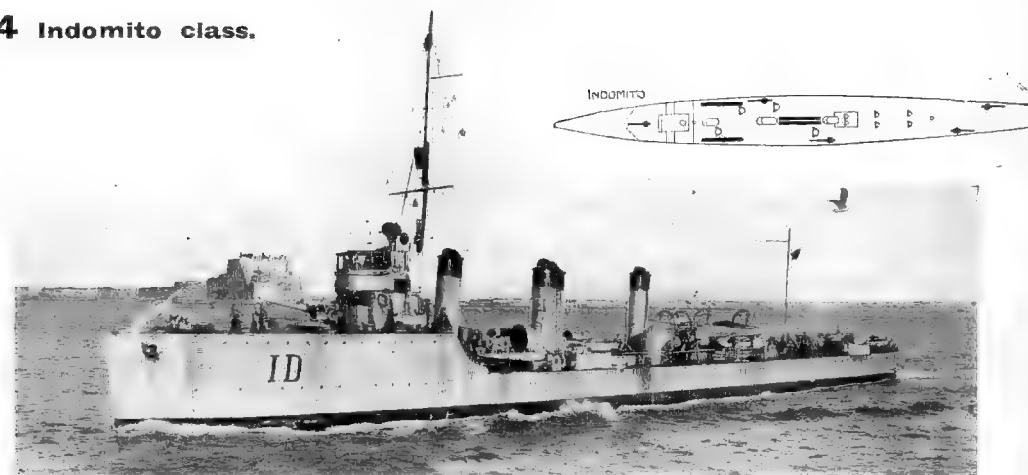


1922 Photo, G. F. Jewitt, Esq.

5 *Ganz-Danubius* type: **Cortellazzo** (ex-Iika), **Grado** (ex-Triglav), **Montefalcone** (ex-Uzok), all built
 1914-17: **Pola** (ex-Orjen, 1913). 850 tons. Dimensions: 274 × 25½ × 8½ feet. Guns and torpedo tubes
 (Austrian)*: 2—3.9 inch, 4—11 pdr., 2—11 pdr. AA., and 4—20.8 inch tubes. A. E. G. turbines and 6 Yarrow
 boilers. S.H.P. 22,000 to 23,700 = 32 to 32.5 kts. Fuel: 110 tons coal, 140 tons oil. Complement, 114. Added
 to Italian Navy, Sept., 1920. A fifth of this type, *Muggia*, was wrecked in Chinese waters, March 15th, 1929.
 Sister boat, *Matelot Leblanc* (ex-Dukla), now in French Navy.

* May be re-armed with Italian guns and T.T.

4 Indomito class.

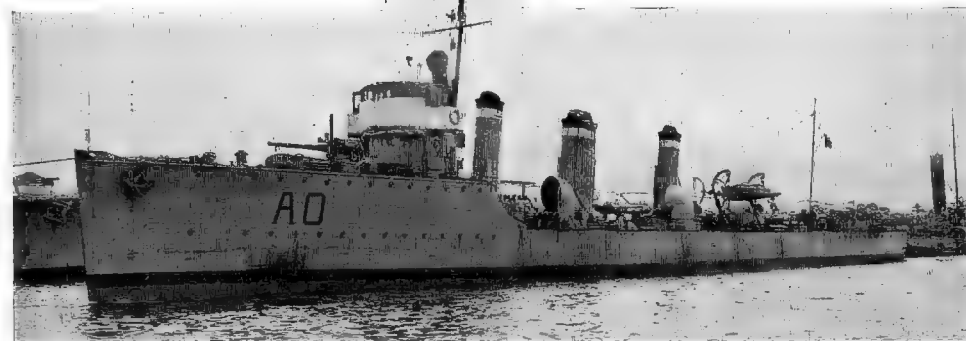
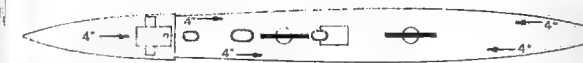


INDOMITO.

1919 Photo, Commr. Holberton, R.N.

4 *Pattison* type (Thornycroft design): **Indomito** (1912), **Impavido**, **Insidioso**, **Irrequieto** (1913). 670 tons.
 Dimensions: 238 (p.p.) × 24 × 8.4 feet. Guns: 5—4 inch, 1—40 m/m., 2 M.G. (except *Impavido*, which carries
 1—4 inch, 4—14 pdr.) All believed fitted for minelaying. Tubes: 4—18 inch. Trials: S.H.P. 17,000 to 18,000 =
 33 to 35.7 kts. 2 Tosi turbines and 4 oil-burning Thornycroft boilers. Fuel: 128 tons. Complement, 94.
 Endurance: 1520 miles (15 kts.), 360 miles (full speed). *Impetuoso* and *Intrepido* of this class lost in the War.

2 Ardente class.



ARDITO.

1919 Photo, Commr. Holberton, R.N.

2 *Orlando* type: **Ardito** (1912), **Ardente** (1912). 695 tons. Dimensions: 238 (p.p.) × 24 × 8.4 feet (mean). Guns:
 5—4 inch, 1—40 m/m. AA., 2 M.G. Tubes: 4 single 18 inch. On trials, 15,700 S.H.P. = 33.4 kts. 2-shaft
 Parsons turbines and 4 oil-burning Thornycroft boilers. 2 screws. Endurance: 1450 miles at 13.5 kts. 360 miles
 (full speed). Fuel: 130 tons. Complement, 94.

ITALY—T.B.

TORPEDO BOATS.

Torpedo Boats (*Torpediniere*).

(under 500 metric tons.)



ASCARO.

1919 Photo.

2 *Ansaldo* type:—**Ascara** (1912), **Fuciliere** (1909). *Ascara* 414 tons, *Fuciliere* 424 tons. Dimensions: 211½ (p.p.) × 20 × 6½ to 7 feet (mean). Guns: 4—14 pdr. Tubes: 3 single 18 inch. On trials, 6500 I.H.P. = 29.1 kts. 3 Thornycroft boilers and 2 screws. Complement, 50. Carry 90 tons oil fuel except *Ascara*, with 50 tons coal + 33 tons oil. Endurance: 915 miles for *Ascara*, 1250 miles for *Fuciliere*, at 15 kts. *Garibaidino* lost during War. Some of these boats have been fitted for minelaying.



(2 funnels.)

1919 Photo by courtesy of *Fli. Orlando*.

2 *Orlando* boats: **74 O.L.T.**, **75 O.L.T.**, Built at Leghorn. Begun 1917. Launched Oct., 1917-Jan., 1918., finished June-Sept., 1918. 200 tons. Guns: 2—14 pdr. A.A. Torpedo tubes: 2—18 inch. S.H.P. 4500 = 29 kts. 2-shaft turbines and 2 water-tube boilers. Coal: 20 tons.

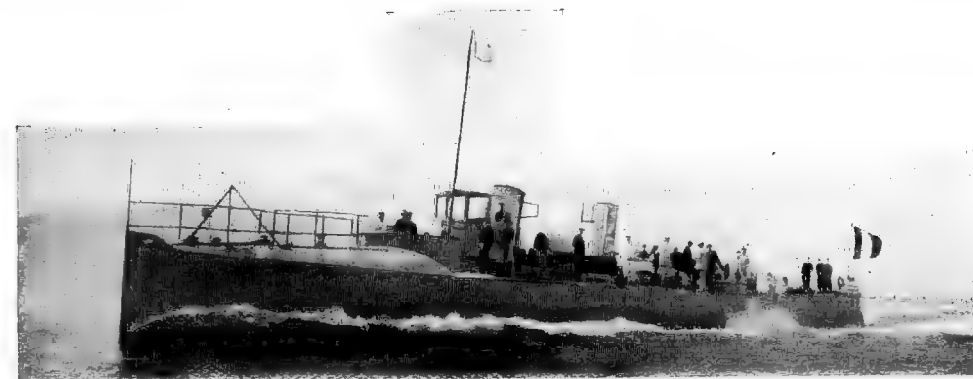
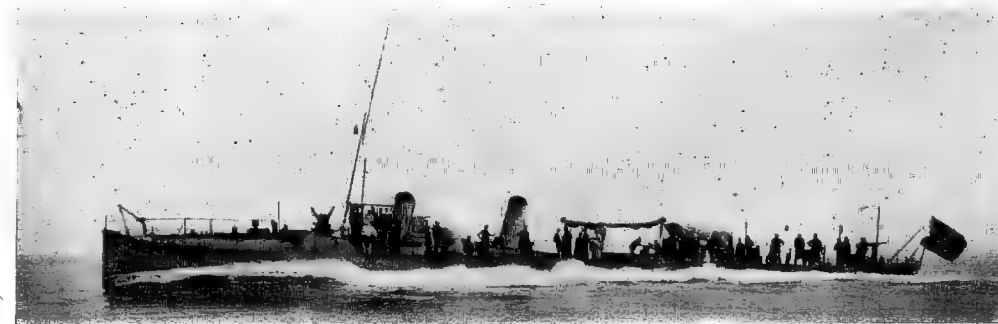


Photo by courtesy of *Fli. Orlando*, 1919.

5 *Orlando* boats: **58 O.L-63 O.L.** Built at Leghorn. Begun 1915-16, launched April-Sept., 1916. Completed May-Oct., 1916. Details generally as 11 *Pattison* boats described on next page. But I.H.P. 3700 = 28.1 kts.

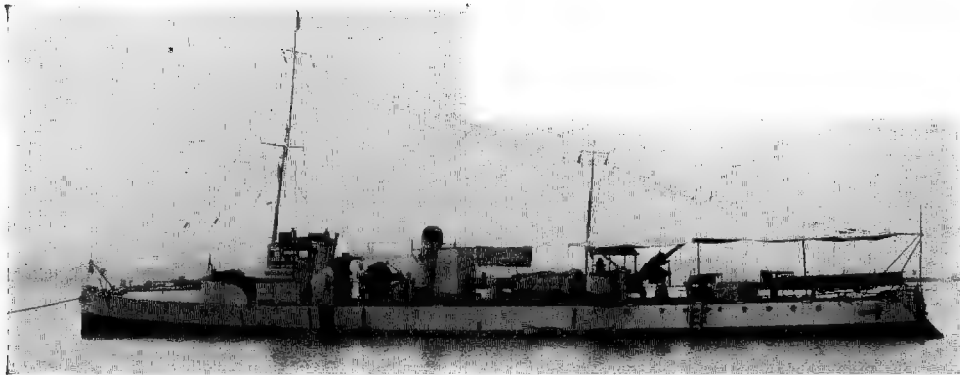


52 A.S.

1920 Photo, *Gio. Ansaldo & C.*

6 *Ansaldo* boats: **52 A.S.-57 A.S.** Built 1915-16 at Sestri-Ponente. Details as 11 *Pattison* boats described on next page, but 2—14 pdr. guns and 1 M.G.

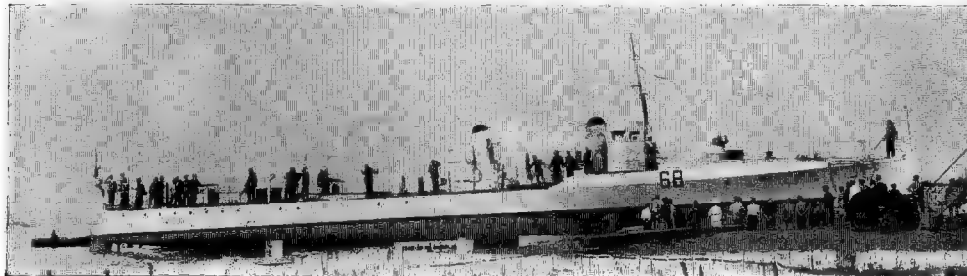
Note to Illustration.—14 pdrs. not combined "Y" type. Guns are in echelon and happened to coincide at the moment the photo was taken.



48 O.S. (2 funnels).

1922 Photo, G. F. Jewett, Esq.

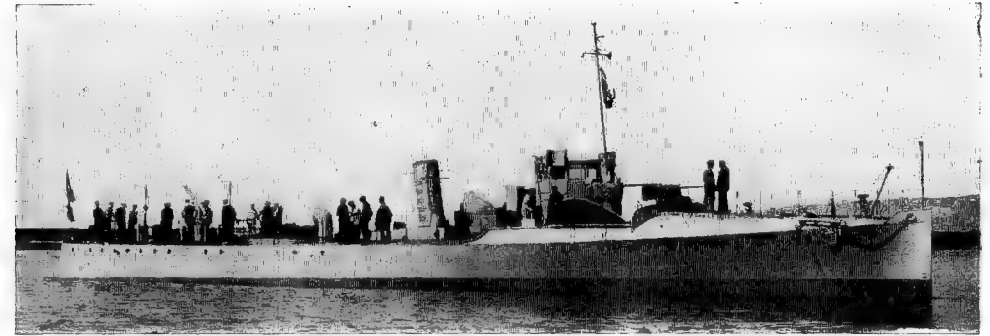
6 Odero boats: 46 O.S.-51 O.S. Built, 1915-16, at Sestri-Ponente. Details as 11 Pattison boats described in next column, but 2-14 pdr. guns.



64-68 P.N. (2 funnels).

1920 Illustration, H. C. Bywater, Esq.

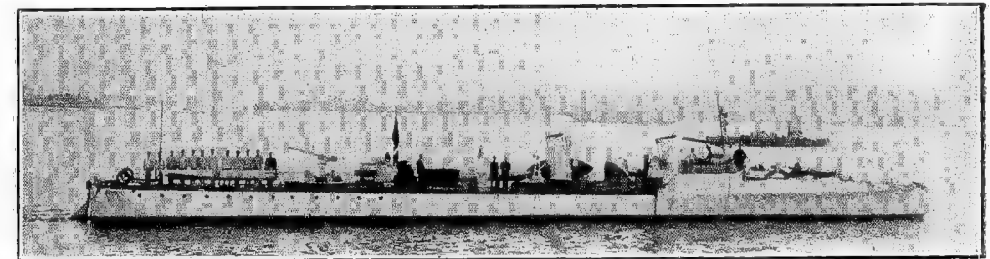
(For description, see next column).



41-45 P.N. (2 funnels).

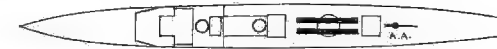
1920 Photo, Ministry of Marine.

10 Pattison boats: 41 P.N.-45 P.N. (begun 1915, launched and completed 1916), 64 P.N., 65 P.N., 69 P.N., 70 P.N. (ex-66 P.N.), 71 P.N. (ex-68 P.N.), (begun 1916 and completed 1917-18). All built at Naples. About 160-165 tons. Dimensions: 139½ × 15 × — feet. Guns: 1-14 pdr. A.A. 1 D.C. thrower. Tubes: 2-18 inch in one twin mounting. J.H.P. 3500 = 28 to 29 kts. Machinery: 2 sets recipr. triple expansion. Boilers: Thornycroft. Oil fuel: 26 tons.



Appearance of all boats as above.

Official Photo.



6 Pattison boats: 33 P.N.-35 P.N.
12 P.N.
9 P.N.
7 P.N.

2 Odero boats: 19 O.S., 15 O.S.
1 Ansaldo boat: 29 A.S.

9 boats in all. Launched 1911-13. Completed 1911-14. Average 125 tons. Dimensions: 139½ × 15 × 5 feet. Guns: 1-6 pdr. Tubes: 2-18 inch I/S.H.P. 2700-3200 = 27.5-31.5 kts. Oil: 15 tons. Complement, 23.

Boilers: 2 Thornycroft oil-burning. Machinery: 2 sets triple expansion. 5 P.N., 17 O.S., 36 P.N., lost in War. Other missing numbers removed from effective list.

Note.

(M. A. S. Boats with torpedo tubes described on a later page.)

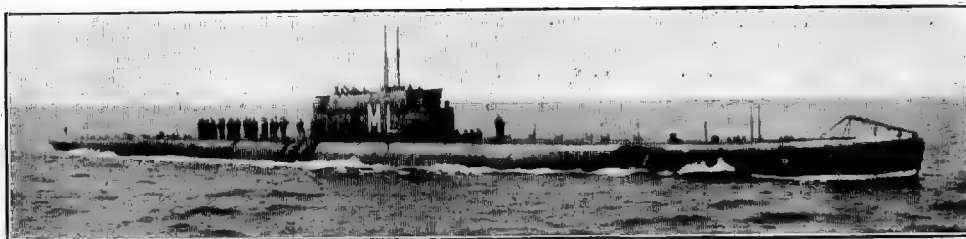
18 + 10 building Ocean-going Boats—(Sommergibili d'alto mare).**4 "Squalo" Class.**

4 *Bernardis* type, ordered 1928 from Cant. Nav. Triestino, Monfalcone: *DELFINO*, *NARVALO*, *SQUALO*, *TRICHECO*. Displacement about 875 tons. 2 sets Fiat Diesels, H.P. 3000. Otherwise improved editions of *Menotti* type. Names translated are respectively *Dolphin*, *Swordfish*, *Shark*, *Walrus*.

6 "Menotti" Class.

Building.

6 *Bernardis* type, ordered 1927: *SANTORRE*, *SANTAROSA*, *CIRO MENOTTI* (both Odero-Terni Co., Spezia); *Fratelli Bandiera*, *Luciano Manara* (both Cant. Nav. Triestino, Monfalcone, Oct., 1929); *LUIGI SETTEMBRINI*, *RUGGIERO SETTIMO* (both Cant. Nav. F. Tosi, Taranto). Displacement: 850 tons on surface, 1065 tons submerged. 2 sets Diesels, (Fiat type in Odero and Monfalcone boats, Tosi in remaining two). H.P. 3000 = 17.5 kts. surface; electric motors, B.H.P. 1200 = 9 kts. submerged. Guns: 1—4 inch. Tubes: 8—21 inch. Are an improvement of *Pisani* design.

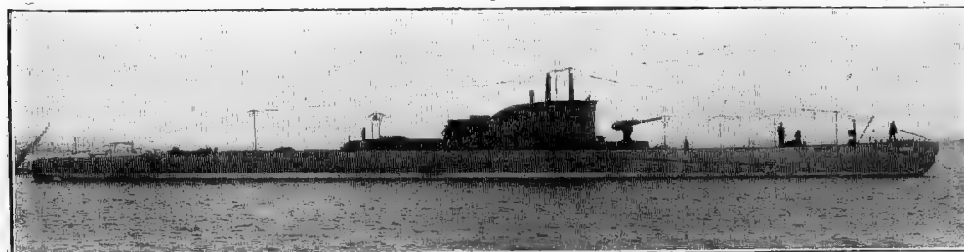
4 "Balilla" class.

D. MILLELIRE.

1928 Photo, Capitan Mateo Mille, R. Sp. N.

4 Odero type: *Balilla* (20th Feb., 1927), *Antonio Sciesa*, (Aug. 12th, 1928), *Enrico Toti*, *Domenico Millelire* (Sept. 19th, 1927). Building at Spezia by Odero-Terni Co. Surface displacement, 1390 tons; submerged, 1884 tons. Dimensions: 282 (o.a.) × 24½ × 14 feet mean draught. Machinery: 2 sets Fiat Diesels, of H.P. 4500 = 18.5 kts. on surface, Electric motors of 2200 H.P. = 9.5 kts. submerged. Guns: 1—47 inch AA. Tubes: 6—21 inch (4 bow, 2 stern), also special long tube aft for minelaying (16 mines carried).

Note.—Above submarines are designed for deep diving, and are of exceptionally strong construction. The design of these boats embodies a number of innovations, such as the placing of the Diesel engines and electric motors much further forward than usual; the elimination of bow hydroplanes; novel distribution of ballast tanks; and an improved form of hull. In consequence, an unprecedented degree of safety, both in diving and manoeuvring, is claimed for this type. They were laid down early in 1925. *Balilla* reached a depth of 55 fathoms in diving trials, May 1928.

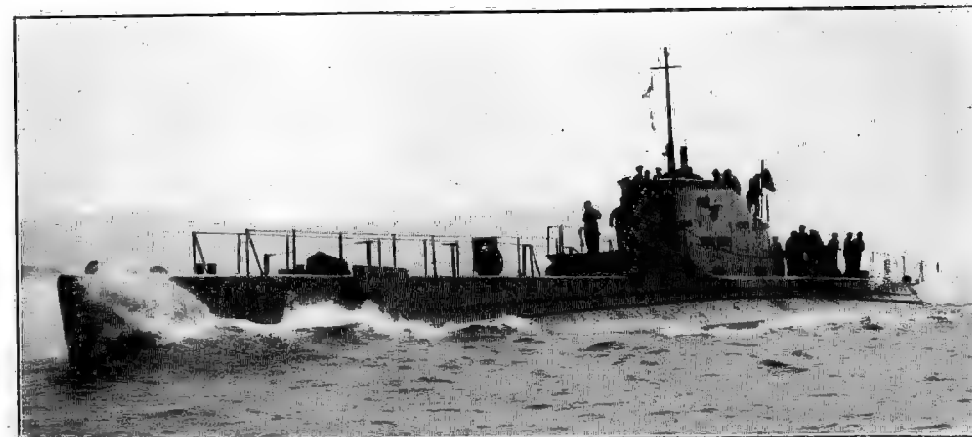
4 "Mameli" class.

G. MAMELI.

1928 Official Photo.

4 *Carallini* type: *Goffredo Mameli* (ex-Masaniello, 9th Dec., 1926), *Pier Capponi* (19th June, 1927), *Tito Speri* (May 25th, 1928), *Giovanni da Procida*. Ordered from Cantiere Navale F. Tosi, Taranto, 1924-25. Displacement: 780 tons on surface, 990 tons submerged. Dimensions: 213½ × 21½ × 13 feet. 2 Tosi Diesel 8-cyl. 4-cycle engines. H.P. 3000 = 17 kts. on surface. Electric motors of 1000 H.P. = 9 kts. submerged. Guns: 1—4 inch. Torpedo tubes: 6—21 inch.

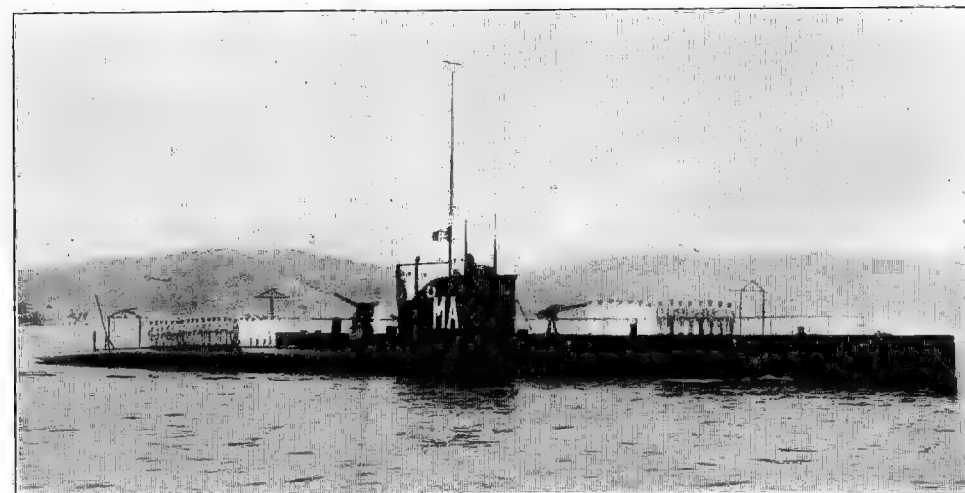
Note.—In March, 1929, *G. Mameli* dived to a depth of 64 fathoms during trials, remaining submerged for 20 minutes.

4 "Pisani" class.

V. PISANI.

1928 Official Photo.

4 *Bernardis* type: *Vittor Pisani*, *Giovanni Bausan*, *Marcantonio Colonna*, *Ammiraglio dei Genueys* (Nov. 14th, 1928). Ordered from Cantiere Navale Triestino, Monfalcone, 1924-25. Displacement: 830 tons on surface, 1050 tons submerged. Dimensions: 223 × 19 × 14 feet. Machinery: 2 sets Diesels—H.P. 3000 = 17.5 kts. on surface. Electric motors of 1000 H.P. = 9 kts. submerged. Guns: 1—4 inch. Tubes: 6—21 inch.

5 "P. Micca" class.

1927 Official Photo, by courtesy of Ministry of Marine.

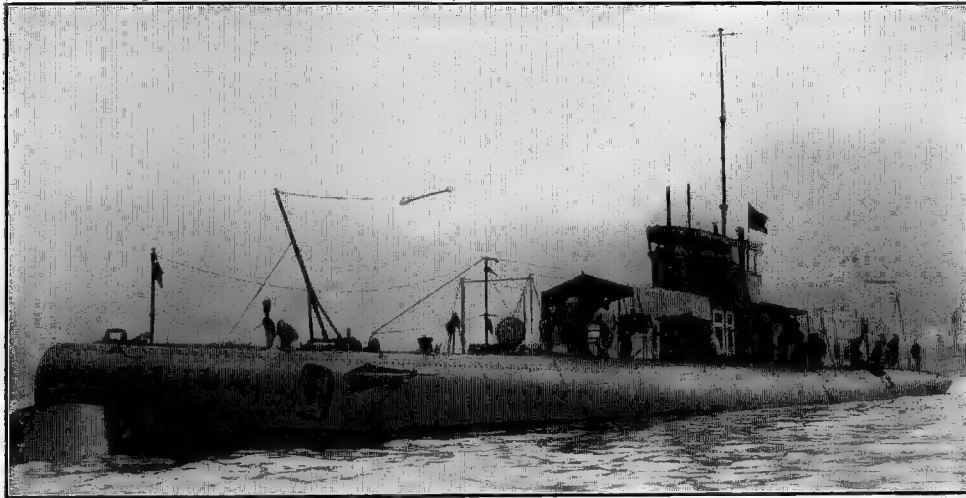
5 *Carallini* type: *Angelo Emo*,* *Lazzaro Mocenigo*,* *Luigi Galvani*, *Pietro Micca*, *Evangelista Torricelli* (Spezia Navy Yard). Displacement 840 tons on surface, 1244 tons submerged. Dimensions: 206½ × 19½ × 14 feet. Guns: 2—14 pdr. (40 cal.) AA. 6—17.7 inch torpedo tubes. Machinery: In first two, 2 Fiat Diesel electric motors on surface and 2 Savigniano electric motors when submerged; next pair have 2 Fiat Diesel and 2 Ansaldo electric motors; and *Torricelli* has 2 Tosi Diesel 4-stroke motors on surface and 2 Ansaldo electric motors. Carry 35 tons oil fuel. B.H.P. 2600 = 13.7 kts. on surface, 1800 = 10.9 kts. submerged. Radius 1900 miles at 10 kts. on surface, 250 miles at 3.4 kts. when submerged. Complement, 37.

*These 2 boats begun at Venice D.Y., Aug., 1914. They were dismantled and taken to Spezia in the summer of 1915 and laid down for a second time. Completed 1918-1919. A sixth boat, *L. Marcello*, has been scrapped.

SUBMARINES

S/M.—ITALY

1 Laurenti Boat.



1925 Photo, Pucci.

1 *Fiat-Laurenti* type: **Giacomo Nani** (Fiat-San Giorgio Co., Spezia, 1915). Displacement: 760 tons *on surface*, 925 tons *when submerged*. Dimensions: 213½ × 19½ × 13½ feet. Guns: 2—14 pdr. AA., 6—17.7 inch torpedo tubes. Machinery: 2 Fiat Diesel engines *on surface*, 2 Savigliano electric motors *when submerged*. 2600 H.P. = 16 kts. *on surface*, 1400 H.P. = 9.8 kts. *when submerged*. Radius: 1500 miles at 11.4 kts. *on surface*, 100 miles at 6 kts. *when submerged*. Oil fuel: 36 tons *normal*, 60 tons *maximum*. Complement, 30. Completed 1919. *Sebastiano Ventero* lost, 26th Aug., 1925; 2 others scrapped, 1927-28.

2 + 3 Building Mine Laying Boats (*Sommergibili—Affondamine*).

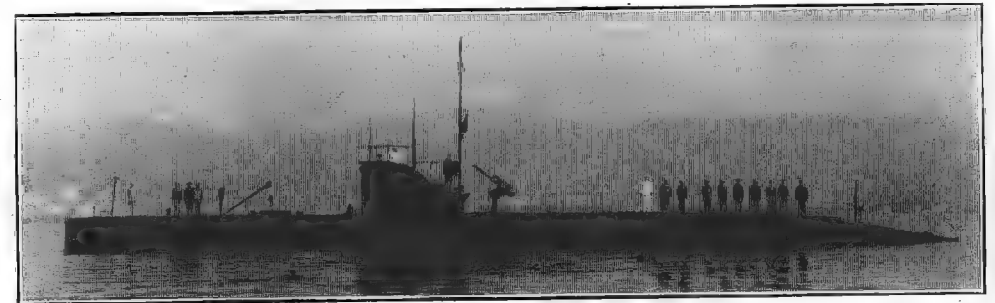
Completing.

1 *Bernardis-Pizzoni* type: **Ettore Fieramosca** (April 15th, 1929). Laid down August, 1926, by Cantiere Navale Franco Tosi, Taranto. 1400 tons *surface* displacement, 1735 tons *submerged*. Surface speed with Diesels of 5500 S.H.P. = 19 kts. Submerged speed with electric motors of 2000 H.P. = 10 kts. Guns: 1—4.7 inch, 6—21 inch tubes. 2 mine-launching chutes. Said to be equipped with a seaplane.

Mine Laying Boats—continued.

Laid down February and Aug., 1927, respectively.

2 *Bernardis* type: **Marcantonio Bragadino** (July 3rd, 1929), **FILIPPO CORRIDONI**. Building by Cant. Nav. F. Tosi, Taranto. Displacement: 825 tons *surface*, 1038 tons *submerged*. Diesels of H.P. 1500 = 14 kts. *surface* speed. Electric motors of 1000 h.p. = 8 kts. *submerged*. Guns: 1—4 inch. Tubes: 4—21 inch. 2 mine-launching chutes.



X 3.

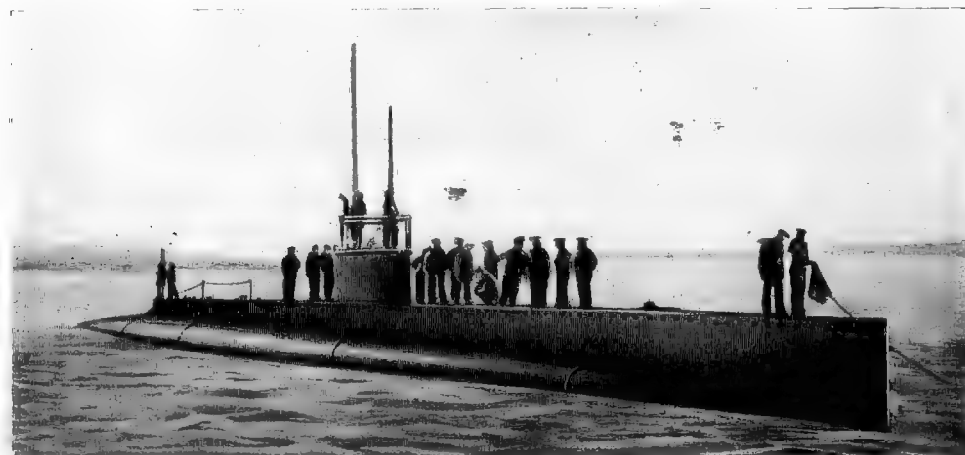
1928 Photo, Pucci.

2 *Bernardis* type: **X2, X3** (Ansaldo, Sestri Ponente, 1916). Displacement: 403 tons *on surface*; 468 tons *when submerged*. Dimensions 140 × 18 × 13 feet. Guns: 1—14 pdr. (30 cal.) AA. Torpedo tubes: 2—18 inch. Carry 18 mines in 9 discharge chutes. Machinery: 2 Ansaldo Diesel *on surface*; 2 Ansaldo electric *submerged*. 660 H.P. = 10 kts. *on surface*; 320 H.P. = 7.9 kts. *when submerged*. Carry 18 tons of fuel. Radius: 1300 miles at 6½ kts. *on surface*; 96 miles at 4 kts. *when submerged*.

22 + 7 Building. Coastal Boats—(Sommergibili Costieri). (Not over 500 tons).

New Construction.

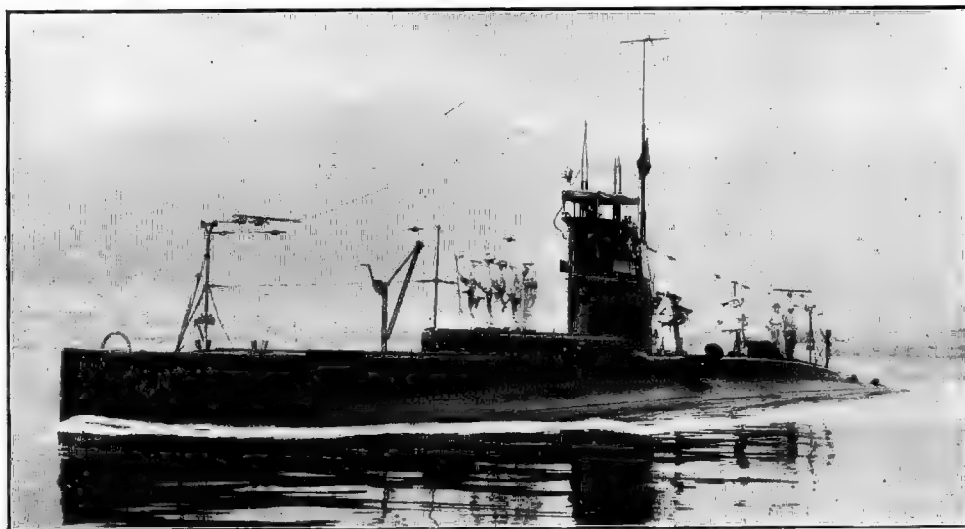
7 coastal submarines of 500 tons surface displacement have been ordered under 1928 and 1929 Programmes.



N 5.

Photo by courtesy of the Ministry of Marine.

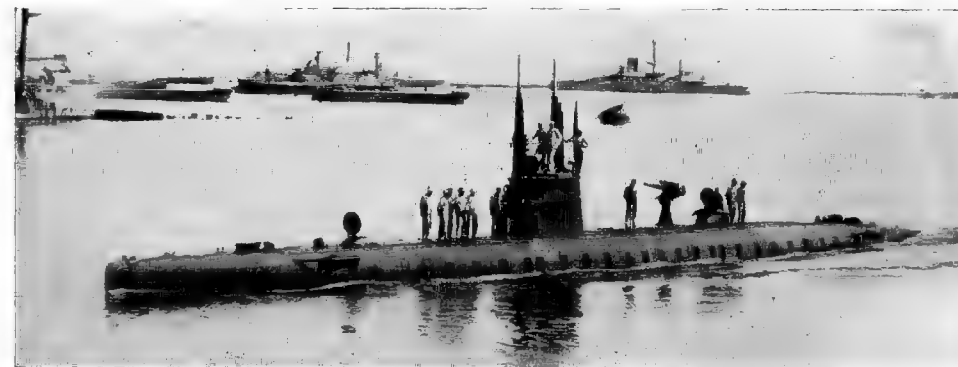
1 *Bernardis* type: **N 6** (1918). Built by Cantiere Navale Franco Tosi, Taranto. Displacement, 276 tons on surface, 357 tons submerged. Dimensions: 152½ × 14½ × 10 feet. Machinery: 2 Tosi Diesel engines, H.P. 700 = 13½ kts. on surface. Electric motors H.P. 320 = 7.9 kts. submerged. Guns, tubes as *N 3*—1 below. Completed Dec., 1917.



1927 Photo, Pucci.

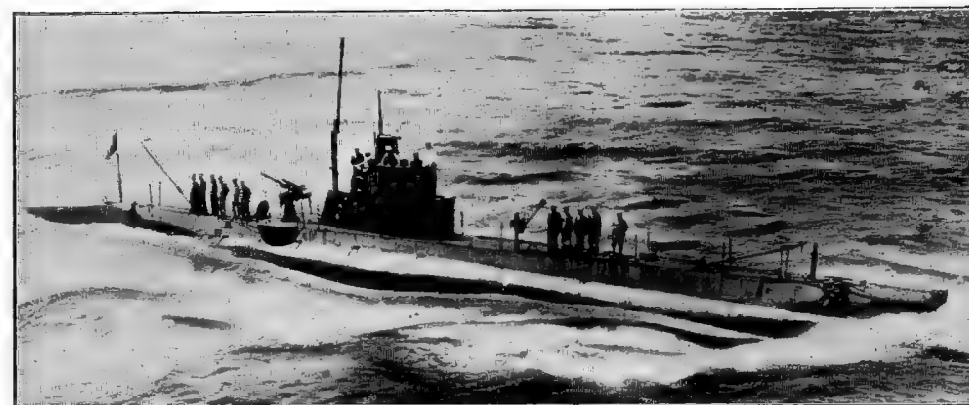
3 *Bernardis* type: **N 1, N 3, N 4**, (Ansaldo Co., Sestri Ponente, 1916). Displacement, 265 tons on surface, 350 tons when submerged. Dimensions: 150½ × 14½ × 10 feet. Guns: 1—14 pdr. (30 cal.) A.A. 2 bow 18 inch tubes. Machinery: 2 Sulzer-Ansaldo Diesel engines on surface; 2 Tecnomasio Italiano electric motors when submerged. H.P. 650 = 12½ kts. on surface, 270 H.P. = 7.4 kts. when submerged. Oil: 8-10 tons. Radius: 1300 miles at 10 kts. on surface, 200 miles at 2½ kts. when submerged. Complement, 21. Completed 1917-18.

Coastal Boats—continued.



9 *Fiat Laurenti* type: **F 1, F 10, F 13, F 19**, built by Fiat-San Giorgio Co., Spezia; **F 18, F 21**, by Odero, Sestri-Ponente: **F 6, F 17, F 20**, built by Orlando, Leghorn, 1916-17. Displacement: 260 tons on surface, 369 tons when submerged. Dimensions: 149½ × 13½ × 10½ feet. Guns: 1—3 inch (30 cal.) A.A. 2—17.7 inch bow tubes. Machinery: 2 Fiat Diesel on surface; 2 Savigliano electric motors when submerged. 670 H.P. = 13½ kts. on surface, 250 H.P. = 7.9 kts. when submerged. Radius: 1100 miles at 9 kts. on surface, 110 miles at 1½ kts. when submerged. Oil: 12 tons. Complement, 22.

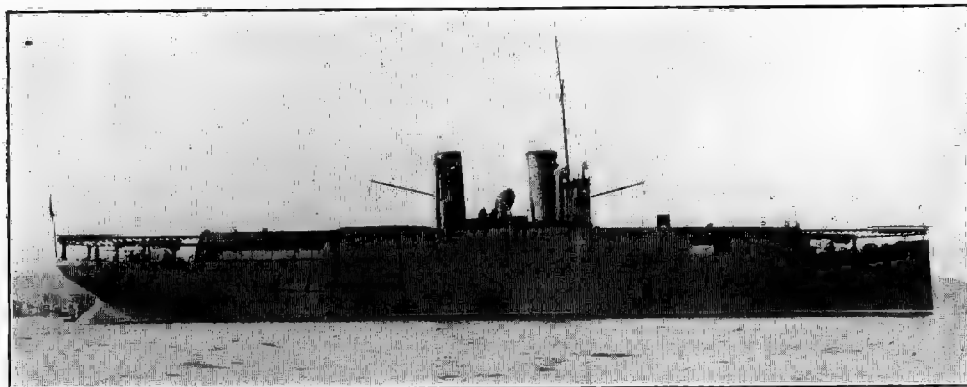
Note.—Missing numbers have been disposed of for scrapping.



H Type.

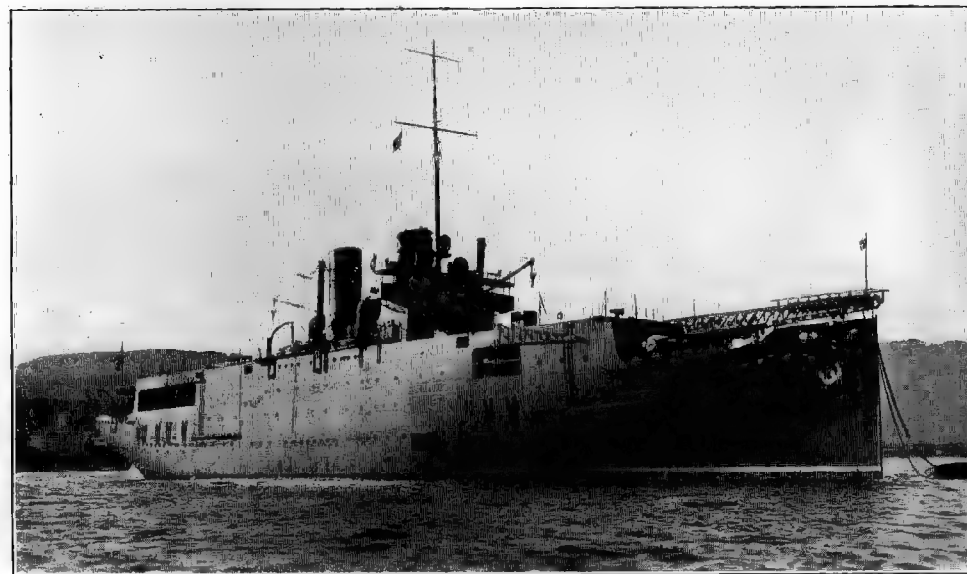
1927 Photo, Pucci.

6 *Holland* type: **H 1, H 2** (1916) **H 3, H 6—H 8** (1917), by Canadian Vickers Co., Montreal. Displacement 361 tons on surface, 474 tons when submerged. Dimensions: 150½ × 15½ × 12½ feet. Guns: 1—14 pdr. (30 cal.) A.A. 4—18 inch bow tubes. Machinery: 2 Nelsco Diesel engines on surface; 2 Electric Dynamic Co. motors when submerged. 960 H.P. = 12½ kts. on surface, 680 H.P. = 10.8 kts. when submerged. Radius: 2000 miles at 7½ kts. on surface, 130 miles at 2 kts. when submerged. Complement 22. Oil: 18 tons. *H 5* War loss, *H 4* badly damaged by fire in Dec., 1928 and removed from effective list.

Aircraft Tender. (*Nave appoggio Idrovolanti*).

G. MIRAGLIA.

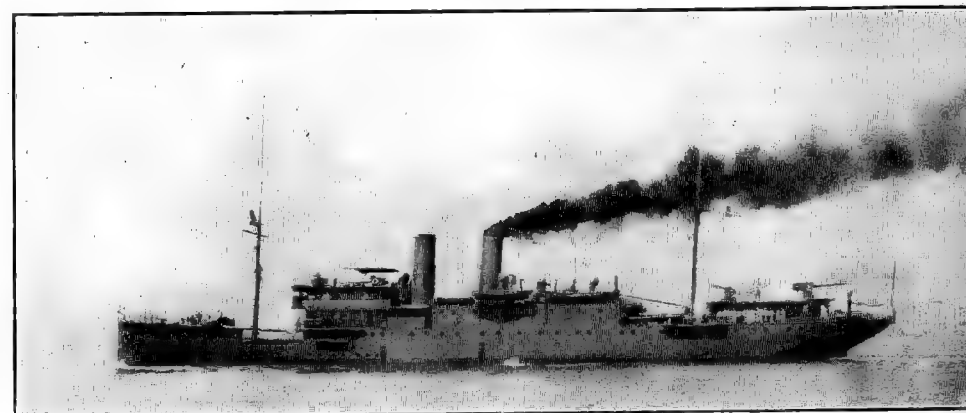
1927 Photo, Capitan Mateo Mille, R. Sp. N.



G. MIRAGLIA.

1927 Photo, Capitan Mateo Mille, R. Sp. N.

GIUSEPPE MIRAGLIA (ex-Citta di Messina, 20th December, 1923). Displacement: 5400 tons. Dimensions: 377 × 49 × 17 feet. Guns: 4—4 inch, A.A., 1—M.G. Parsons geared turbines. I.H.P. 12000 = 21.5 kts. Oil Fuel: 440 tons. Complement 180. Reconstructed at Spezia D.Y., 1923-25. Carries 4 large and 16 smaller planes, with usual facilities for repairs and renewals and catapults at either end of flight deck for launching planes.

Submarine Depot Ships. (*Navi per appoggio sommergibili*).

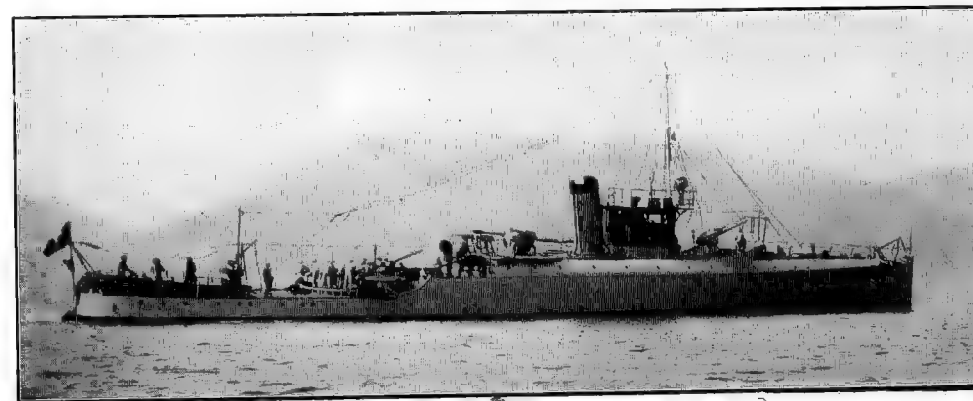
A. PACINOTTI.

1926 Photo, by courtesy of the Ministry of Marine.

ALESSANDRO VOLTA (ex-Caprera, 1921), **ANTONIO PACINOTTI** (ex-Citta di Sassari, 1922). Both reconstructed at Castellamare D.Y., 1924-25. 2400 tons. Dimensions: 288½ × 36 × 15 feet. Parsons geared turbines. H.P. 4500 = 19 kts. Guns: 2—4.7 inch, 2—3 inch A.A.

Convoy Gunboats (*Cannoniere di Scorta*).

5 Bafile class.



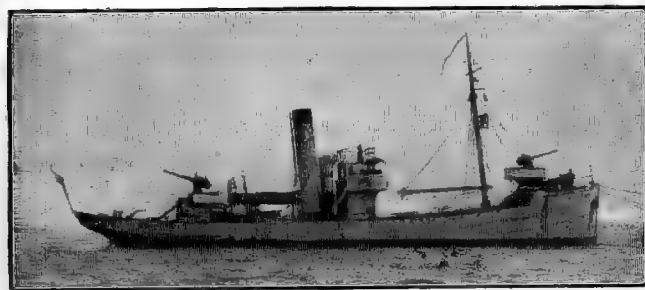
T. FARINATI.

1925 Photo, by courtesy of the Ministry of Marine.

5 *Pattison* type: **Alessandro Vitturi**, **Ernesto Giovannini**, **Andrea Bafile**, **Tolozetto Farinati**, **Carlo del Greco**. (1919-22). 230 tons. Dimensions: 170.6 × 19 × 5.6 feet. Guns: 2—4 inch, 45 cal., 2 M.G. Torpedo Tubes: 2—18 inch in one twin mounting. S.H.P. 2800 = 23 kts. Trials: H.P. 3270 = 23.7 kts. Oil: 40 tons. Radius: 900 miles at 20 kts.
Note.—These vessels are classed officially as "Cannoniere di Scorta" (Convoy Gunboats), but resemble T.B., corresponding in some respects to the British P-boats. They were originally designed as small Minelayers, hence shape of hull. A sixth vessel of this class, *E. Rosso*, was burned on stocks and hull scrapped.

ITALY—Gunboats.

Convoy Gunboats—continued.



CIRENE. 1925 Photo, by courtesy of the Ministry of Marine.

CIRENE (ex-G 13, ex-Hoyo Maru, 1912). 500 tons. Guns: 2—14 pdr., A.A., 1 M.G. H.P. 300 = 12.3 kts.

RICCARDO GRAZIOLI LANTE (ex-Abisso, ex-Falco, ex-Petrel, Aberdeen, 1912). Purchased 1917. 400 tons. Guns: 2—14 pdr., A.A., 1 M.G. H.P. 550 = 12 kts.

Colonial Gunboats (Canniere per Servizio Coloniale).

Note.—Cruisers *Campania* and *Libia* are also so classed.



1920 Photo, A. Boo, Cheefu.

SEBASTIANO CABOTO (Palermo, 1913). Displacement: 877 tons. Complement, 104. Dimensions: 196.8 × 31.8 × 9.2 feet. Guns: 6—14 pdr., 4 machine. Designed H.P., 1200 = 13 kts. 2 screws, 2 cyl. (direct flame) boilers. Coal: normal 87 tons, maximum 187 tons.

BOEO (ex-Am. Tromp, 1916). 235 tons. Dimensions: 99 × 19 × 7 feet. Guns: 1—14 pdr. A.A., 1 M.G. H.P. 300 = 9 kts.



PALMAIOLA. 1925 Photo, by courtesy of the Ministry of Marine.

GUNBOATS, Etc.

Colonial Gunboats—continued.

PALMAIOLA (ex-Mary, 1916). 562 tons. Dimensions: 133 × 19½ × 12 feet. H.P. 380 = 8.5 kts. Guns: 1—14 pdr. A.A.



GEN. ARIMONDI. 1925 Photo, by courtesy of the Ministry of Marine.

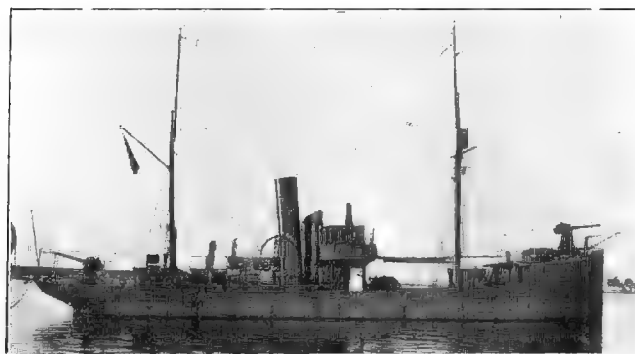
GENERALE ARIMONDI (Glasgow, 1910, purchased 1917, ex-Gorgo, ex-Pelican). 580 tons. H.P. 540 = 9 kts. Guns: 1—14 pdr., A.A., 2 M.G.

The following were all acquired from Japan, 1917, and are employed in colonial service. All launched 1911-12, and mostly armed with 1—14 pdr. A.A. Some may carry minesweeping gear.

ALULA (ex-G 23, 1912). (Depot ship, Red Sea). 430 tons. Speed: 13 kts.

PORTO CORSINI (ex-G 15, ex-Fumi Maru). 380 tons. Speed: 12 kts.

RIMINI (ex-G 16, ex-Fuku Maru). 420 tons. Speed: 9.5 kts.



GALLIPOLI. 1929 Photo, by courtesy of Ministry of Marine.

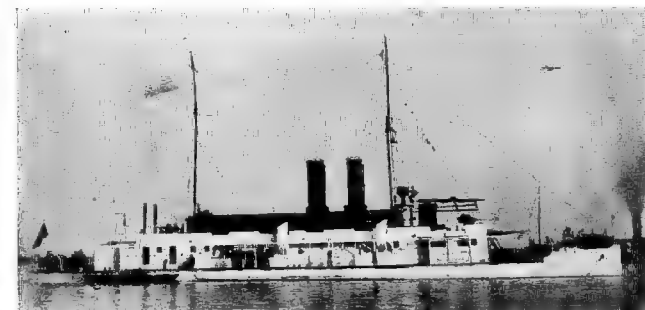
GALLIPOLI (ex-G 31, ex-Hakata Maru No. 8). 400 tons. Speed: 10.5 kts.

OTRANTO (ex-G 36, ex-Sumiye Maru). 385 tons. Speed: 10 kts.

AUGUSTA (ex-G 37, ex-Oshima Maru). 390 tons. Speed: 12 kts.

MAGGIORE TOSELLI (ex-G 33, ex-Toyo Maru). 370 tons. Speed: 8 kts.

China Gunboat (Cannoniera fluviale per la China).



(For service on Yangtze.)

ERMANNO CARLOTTO (Shanghai Dock & Engineering Co. 1921). Shallow-draught river gunboat. 220 tons. Dimensions: 140 × 24½ × 3 feet. Guns: 2—14 pdr., 4 machine. Designed H.P., 1100 = 14 kts. 2 Yarrow boilers Complement, 73.

Royal Yacht.



SAVOIA. 1923 Photo, by courtesy of the Ministry of Marine.

SAVOIA (ex-Citta di Palermo, 1st September, 1923.) 5800 tons. Dimensions: 390 (w.l.) × 49 × 17 feet. Guns: 4—14 pdr. A.A. 2 sets Parsons geared turbines. 8 Yarrow boilers, oil-fired. I.H.P. 12,000 = 21.5 kts.

Note.—Built at Spezia and reconstructed by Cant. Nav. Riuniti, Palermo, as a yacht.

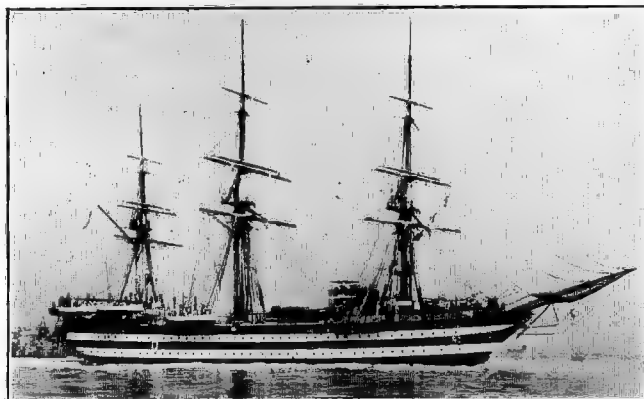
Armed Yacht (*Yacht Armata*).
(Classed as Gunboat.)



1928 Photo, by courtesy of Ministry of Marine.
AURORA (ex-*Marechiaro*, ex-Austrian *Taurus*, ex-*Nirvana*).
(D. & W. Henderson, Glasgow, 1904). Reconstructed 1928.
Displacement: 1429 tons. Dimensions: 261 (o.a.) × 30
× 14 feet (mean). Triple expansion engines. 2 Pattison
boilers. H.P. 3000=13.5 kts. Oil: 117 tons.

Training Ships (*Navi Scuola*).

Note.—Old cruisers *S. Giorgio*, *S. Marco*, *Pisa* and *F. Ferruccio*,
described on earlier pages, are, or have been employed in
Training Service.



C. COLOMBO. 1928 Photo, Captain M. Mille, R. Sp. N.
CRISTOFORO COLOMBO (April 4th, 1928.) Built at
Castellamare. Designed by Lieut.-Colonel F. Rotundi and
laid down April, 1926. Displacement: 2985 tons *normal*, 3200
tons *deep load*. Dimensions: 218 (p.p.) × 48½ × 20½ feet.
Guns: 6—3 inch AA., 5 M.G. Machinery: 2 Tosi Diesel-
driven generating units and 2 Marelli electric motors. H.P.
1600/1100 = 10.5 kts. 1 screw. Fuel: 103 tons. Radius:
6000 miles at 8 kts.

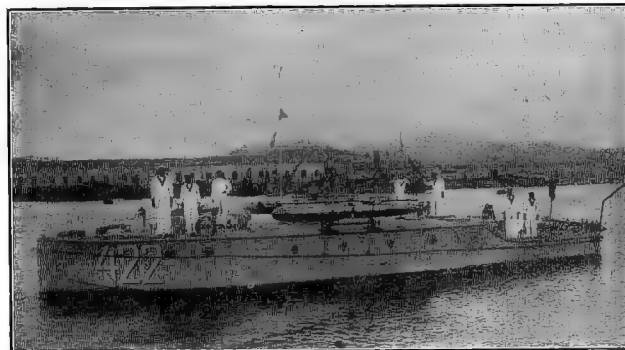
Notes.—*C. Colombo* usually depends on sail power, machinery being treated as
auxiliary. Hull, masts and yards, are all of steel. Loud speakers and echo
sounding gear form part of her equipment. About 140 midshipmen and
cadets (or an equal number of boys) are usually carried.

MISCELLANEOUS VESSELS.

M. A. S. 1—431 (*Motobarche Anti-Sommergibili*).

Note.—Correspond to British C.M.B. and M.L. types. Many
sold out, scrapped, etc. Present total 86.

"TIPO VELOCI" (15 boats): 5 S.V.A.N. boats: **M.A.S. 423**
—426, 430. 1 Baglietto boat: **M.A.S. 431.** Built at
Venice. 13 tons. Length: 52½ feet. 1500 B.H.P.=40 kts.
2 M.G. Torpedo tubes: 2. 5 D.C. carried.



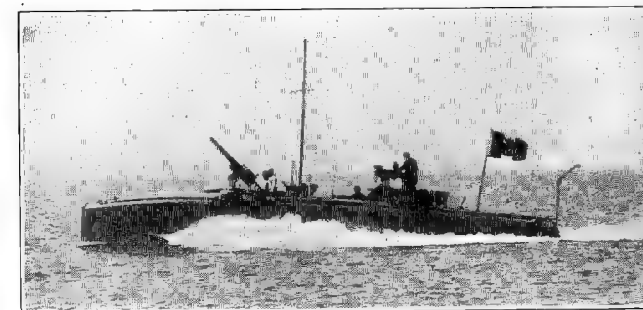
1926 Official Photo.

2 S.V.A.N. boats: **M.A.S. 418, 422** (1922). 21 tons. Length:
59 feet. 1200 B.H.P. = 26 kts. 2 M.G. Torpedo tubes:
2—17.7 inch. 3 D.C. carried.
4 Baglietto boats: **M.A.S. 397—400** (1920). 30 tons. Length:
69 feet. Motors (Isotta Fraschini): 1600 B.H.P. = 33 kts.
Guns: 1—14 pdr., 1 M.G. Torpedo tubes: 4—18 inch in some.
3 S.V.A.N. boats: **M.A.S. 427—429** (1925). 31 tons.
Length: 72.2 feet. Motors (Isotta Fraschini): 1200 B.H.P.=
28 kts. Guns: 1—14 pdr., 1 M.G. Torpedo tubes: 2—18 inch.



"TIPO C": 24 BOATS (1916-18). 43 tons. Length: 80 feet.
Motors (Standard): 450 B.H.P. = 19 kts. Guns: 1—14
pdr., 40 cal (A.A.) and 1 M.G. Are much the same as British
ML 1—151.
M.A.S. Nos. 63, 78, 82, 105, 110, 113, 256, 263, 265, 270, 271,
279, 291, 297, 298, 312, 332, 346, 387, 389—391, 395, 396.

M. A. S.—continued.



1919 Photo.

"TIPO B": 4 S.V.A.N. and Duerot boats (1916-19). 19 tons.
Length: 59 feet. Motors (Isotta Fraschini): 500 B.H.P. =
18 kts. Guns: 1—14 pdr., 30 cal. and 2 M.G. 20 D.C.
M.A.S. Nos. 237, 243, 249, 250.



1919 Photo.



With two torpedoes.

1919 Photo.

"TIPO A": 43 boats (S.V.A.N., Ansaldo, Orlando, Baglietto,
etc., 1916-19). 11½-12 tons. Length: 52½ feet. Motors
(Isotta-Fraschini or Sterling, or F.I.A.T.): 400 to 500 B.H.P.
= 22-26.5 kts. Guns: (a) 1—3 pdr., 40 cal. and 1 M.G., or
(b) 1—6 pdr., 43 cal. and 1 M.G. Several have 2 torpedo
tubes or dropping gears: others carry 4 mines.
M.A.S. Nos. 36, 48, 50,—52, 54, 56, 92, 94, 95, 100, 141, 145, 146,
155—157, 161, 165, 178, 179, 188—190, 200, 204, 206, 208,
210, 212, 213, 216, 217, 219, 222—225, 228—230, 320, 326.

ITALY—C.M.B., Oilers, Etc.

Fuel Ships (*Navi rifornimento carbone e naftetina*), and
Oil Tankers (*Navi Cisterne per nafta*).

Note.—A 2000 ton Oiler is reported to have been ordered in 1928.



1928 Photo, by courtesy of Ministry of Marine.

TARVISIO. Oil Tanker (Castellamare, April 11th, 1927).
11,700 tons. Dimensions: 438.8 × 52 × 24½ feet. H.P.
2,800 = 11 kts. Guns: 4—4.7 inch, 2—14 pdr. A.A.
Cargo: 8,000 tons. Protective arrangements as *Brennero*.



BRENNERO.

1925 Photo, by courtesy of Ministry of Marine.

BRENNERO (Societa Esercizi Bacini, Riva Trigoso, 1921).
Displacement: 10,600 tons (7400 tons *d.w.c.*). Length (*p.p.*):
428 feet. Beam: 52.5 feet on *w.l.* and 59 ft. *outside bulges*.
Draught: 24.3 feet. Guns: 4—4.7 inch (50 cal.) Magazines
are well protected. I.H.P. 9500 = 10.5 kts. (for *trials*), 9.5
kts. (in service). Triple expansion engines. 1 screw.
Oil fuel only. Special Protection: "Pugliese" type bulges,
with central "shock-absorbing" cylinders.

C.M.B., OILERS, ETC.

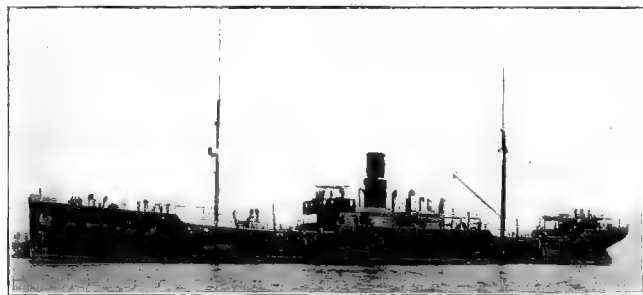
Fuel Ships & Oil Tankers—continued.



URANO.

Photo added 1927.

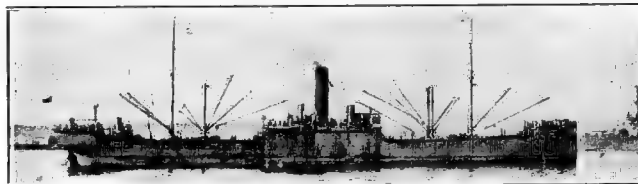
URANO (Deutsche Werke, Kiel, 1922). Oil tanker, built under
War Reparations account. Diesel engines. B.H.P. 1,900 = 10
kts. 11,500 tons. Dimensions: 398 × 54 × 23½ feet. Guns:
6—4.7 inch, 2—14 pdr. A.A. Cargo, 8,000 tons.



NETTUNO.

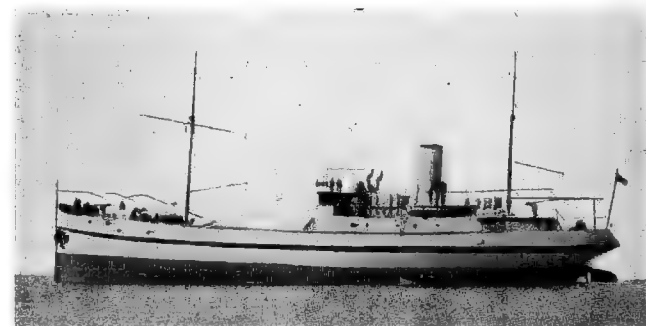
1928 Photo, by courtesy of Ministry of Marine.

GIOVE, NETTUNO (1916). Oil tankers. 10,310 tons. Dimen-
sions: 416½ × 50½ × 24 feet. Armament: 6—14 pdr. H.P.
3000 = 10.5 kts. Cargo: 6000 tons oil fuel.



BRONTE (1904). Fleet Collier, Oil Tanker and Transport.
9460 tons. Complement, 79. Guns: 4—6 pdr. With full
cargo, 3700 I.H.P. = 11.5 kts.; with reduced cargo, 4300
I.H.P. = 14.5 kts. 2 screws. 4 cyl. boiler. Carries 6,000
tons coal or 4000 tons oil + 2000 tons coal. Own coal:
550 tons. *Sterope* (sister ship) lost during War.

Fuel Ships and Oil Tankers—continued.



STIGE (1922). Petrol Carrier. **COCITO, LETE**, (1914-15).
Oil tankers. 1204 tons. Armament: 1—14 pdr. Fiat
Diesel engines. H.P., 400 = 8.5 kts. Cargo: 760 tons.



PROMETEO.

1928 Photo, Pucci.

PROMETEO (ex-Ostia). (1923). 1,080 tons. Speed: 10 kts.
Guns: 2—14 pdr. AA.

Fuel Ships & Oil Tankers—continued.



NIOBE. 1929 Photo, by courtesy of Ministry of Marine.
NIOBE (ex-German *Sylt*, Reiherstieg Yard, Hamburg, 1916).
 Collier. 3400 tons. Speed: 11 kts. Guns: 2—4.7 inch,
 1—14 pdr. AA. Cargo capacity: 2000 tons coal.

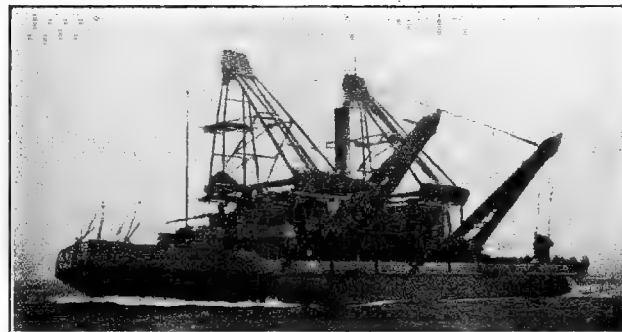


CERERE. 1929 Photo, by courtesy of Ministry of Marine.
CERERE (ex-Baltrum, 1915). 2,730 tons. Speed: 10 kts.
 Guns: 2—4.7 inch, 1—14 pdr. AA. Capacity: 1,500 tons.
MARTE (ex-Austrian *Vesta*) (Armstrong, 1892). 2,500 tons.
 I.H.P. 1200=10 kts.

MISCELLANEOUS VESSELS.

Submarine Salvage Ship.

(*Pontone per recupero Sommergibili.*)



ANTEO (Smulders, Schiedam, 1914). Special Salvage Ship for
 Submarines. 2100 tons. Dimensions: 164 × 73½ × — feet.
 I.H.P., 750 = 8 kts. 2 screws 2 cyl. boilers. 2 cranes,
 each lifting 200 tons.

High Sea Tugs (*Rimorchiatori d'Alto Mare.*)

GLASONE (building at Cantiere Breda, Venice). Displacement,
 1520 tons. Dimensions: 210 × 33½ × 13 feet. H.P. 2500.
 Guns: 2—3 pdr. A.A.

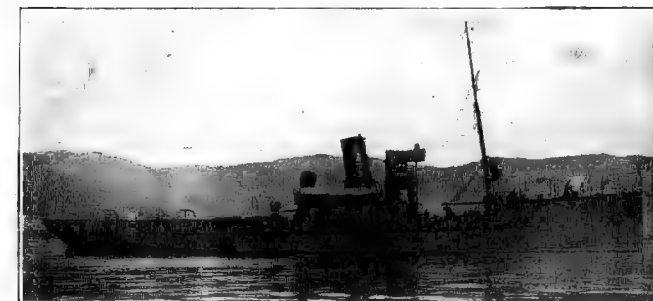


TESEO. 1928 Photo, Pucci.
TESEO (ex-Austrian *Herkules*, 1910; taken over 1920).
 Salvage Vessel and Tug. 1500 tons. Dimensions: 210 ×
 33½ × 13 feet. Guns: 2—3 pdr., 44 cal., 1 M.G. Designed
 H.P. 2500 = 10 kts. 2 screws. Yarrow boilers. Com-
 plement, 81.

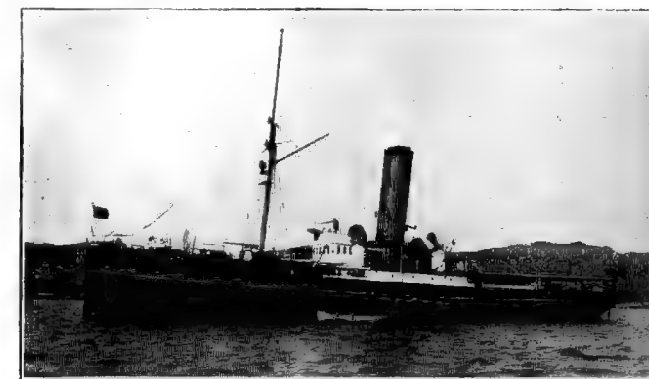
POLIFEMO (ex-*Einigkeit*, 1925). Salvage Vessel and Tug.
 1180 tons. H.P. 1250 = 12 kts. Thornycroft boilers.

Miscellaneous—ITALY

High Sea Tugs—continued.

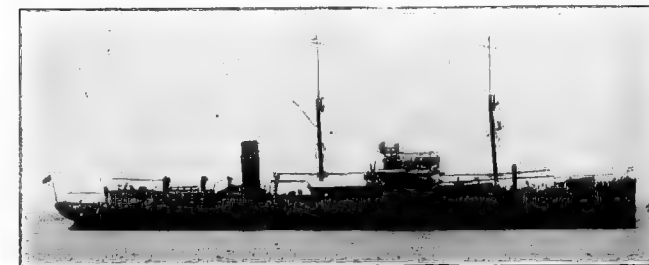


TITANO. Photo added 1927.
TITANO (1913). High Sea Tug. 970 tons. Guns: 2—3 inch.
 H.P., 1970 = 15 kts. 2 screws. 2 Gennardini boilers.
 Coal: 160 tons.



CICLOPE. Photo added 1927.
CICLOPE (1903). 840 tons. Guns: 2—3 inch. H.P. 1900
 = 13.6 kts. 2 screws. Pattison boilers.
 Note.—There are 70 Tugs of 350—500 tons and 104 smaller Tugs;

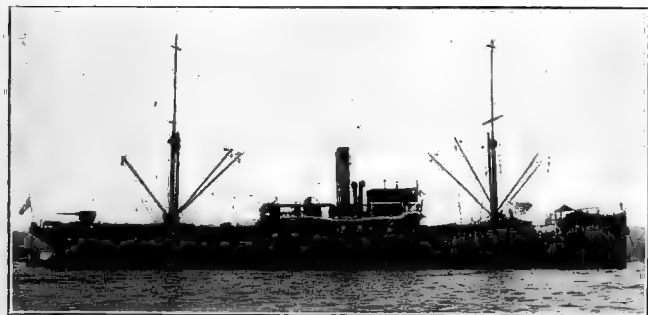
Repair Ship (*Nave Officina.*)



1928 Official Photo.
QUARNARO (Scoglio Ulivi Yard, Pola, July 30, 1924). 8140
 tons. Dimensions: 360 × 48½ × 23 feet. Triple expansion
 engines. H.P. 2,300=11.5 kts. Guns: 3—4 inch AA.

ITALY—Miscellaneous.

Transports (*Trasporti*).



CHERSO.

1928 Photo, Pucci.

CHERSO (ex-*Amalfi*), **LUSSIN** (ex-*Marsala*). Built by Neptun Yard, Rostock. Displacement: 4,500 tons. Dimensions: 300 × 41 × 17½ feet. H.P. 1,100 = 10.5 kts. Guns: 1—4.7 inch., 1—14 pdr. A.A. Classed as "*Navi Trasporto Materiale*." Cargo: 3,000 tons.

GIANNUTRI (ex-*Elba*, 1915). 770 tons. Guns: 2—3 inch. H.P. 1150 = 13.3 kts.

Munition Carriers. (*Navi Trasporto Munizioni*.)



BUFFOLUTO.

1928 Photo, Pucci.

PANIGAGLIA (10th July, 1923), **BUFFOLUTO** (1924), **VALLELUNGA** (1924). All built by Ansaldo San Giorgio Co. 1035 tons. Dimensions: 184½ (o.a.), 172½ (p.p.) × 29½ × 11 feet. Guns: 2—4 inch, 1—2 pdr. AA. H.P. 1500 = 12 kts. Radius at this speed, 960 miles.

MISCELLANEOUS VESSELS.

Research Ship.



CITTA DI MILANO.

1929 Official Photo.

CITTA DI MILANO (ex *Grossherzog von Oldenburg*, 1905). 5900 tons. Dimensions: 305 × × feet. Guns: 2—4 inch, 1—6 pdr., 1 M.G. Speed: 11.5 kts. (Originally intended for cable laying.)

Surveying Ships (*Navi per Servizio Idrografico*).



AM. MAGNAGHI.

1929 Photo, Capt. M. Mille, R.Sp.N.

AMMIRAGLIO MAGNAGHI (Ansaldo, -/8/14). 2050 tons. Complement, 137. Dimensions: 229½ × 37½ × 12½ feet. Guns: 4—14 pdr. I.H.P., 2000 = 14 kts. Machinery: 2 sets vertical triple expansion. Boilers: 4 cylindrical. Was originally laid down as a Passenger Steamer.

Surveying Ships—continued.

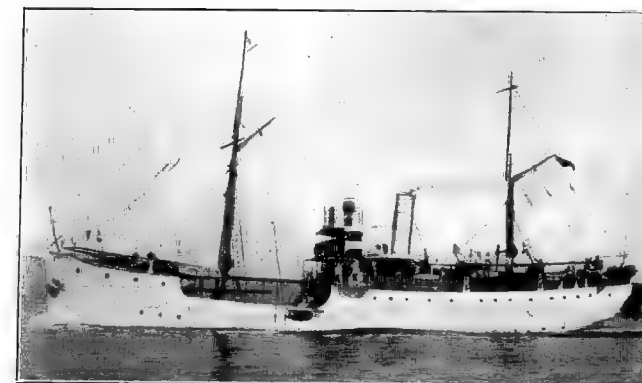


SCILLA.

1929 Official Photo.

SCILLA (ex-*Panaria*, ex-*Fantasma*, 1916). 470 tons. Guns: 1—14 pdr. AA. H.P. 450 = 11 kts.

CARIDDI (ex-*G 21*, 1917). 440 tons. Guns: 2—14 pdr. AA. Speed: 10 kts.



TRITONE.

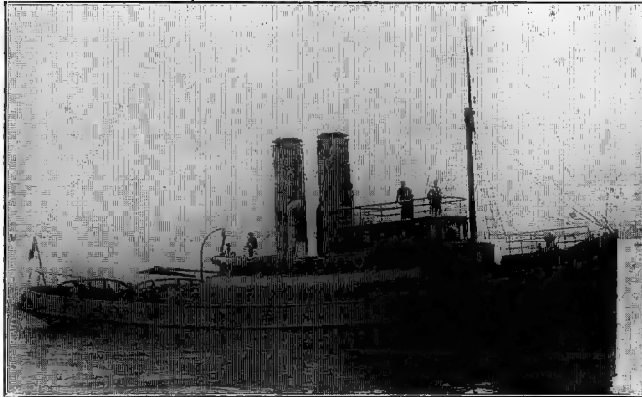
1929 Official Photo.

TRITONE (ex-*G19*, ex-*Tamashima Maru*, 1913). 450 tons. H.P. 450 = 10 kts. Guns: 1—14 pdr. AA.

MISCELLANEOUS VESSELS.

Miscellaneous—ITALY

Surveying Ships—continued.



L. F. MARSIGLI.

1929 Official Photo.

LUIGI FERDINANDO MARSIGLI (ex-Tremith, 1916). 450 tons. Speed: 9 kts. Guns: 1—3 inch.

Note.—L. F. Marsigli is officially classed as "Nave Talassografica."

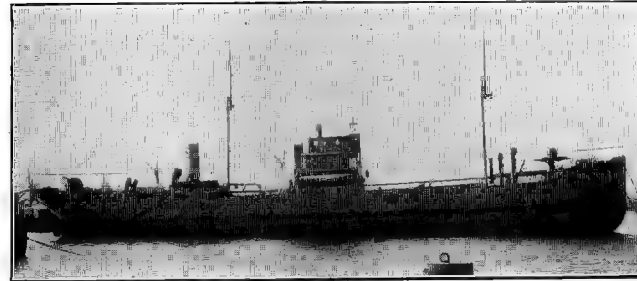
MARIO BIANCO (ex-G24, ex-Fukuhaku Maru). Kobe, 1911. Purchased 1917. 385 tons. 11.5 kts. 2—14 pdr., AA.



1928 Photo, Pucci.

DANTE DE LUTTI (ex-G34, ex-Tomiye Maru, Nagasaki, 1911). Purchased 1917. 370 tons. Guns: 2—14 pdr., AA.

Water Carriers (Navi Cisterne per Acqua.)



DALMAZIA.

1929 Official Photo.

DALMAZIA (Fiume, 1922), **ISTRIA** (Fiume, 1923). Displacement: 3000 tons. Speed: 12 kts. Guns: 1—4.7 inch, 1—14 pdr. Cargo: 1800 tons. Both built at Quarnaro Yard.

PAGANO, VERDE (1921). 1490 tons. Fiat Diesel engines. B.H.P. 400 = 8.5 kts. Guns: 1—4.7 inch, 1—3 inch. Capacity: 950 tons.

FLEGETONTE (1915). Similar to Oil Tankers of Cocito type. 1200 tons. Capacity: 750 tons.

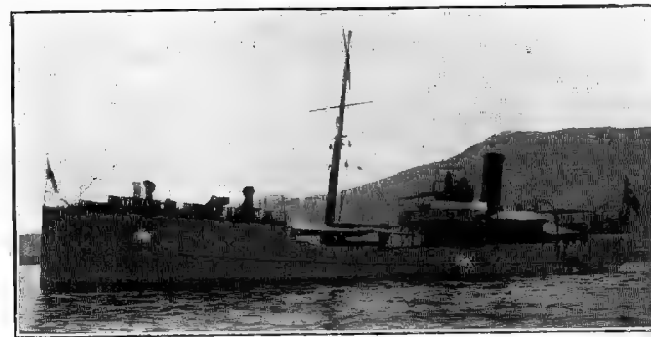
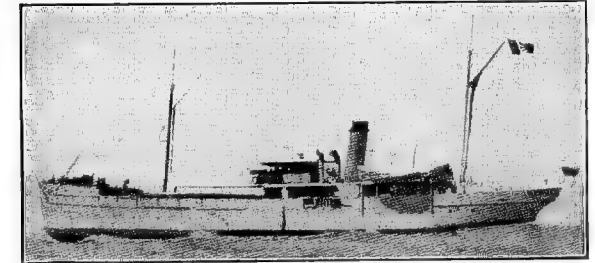


Photo added 1927.

ERIDANO (1911). 1260 tons. Guns: 2—3 pdr. Designed H.P., 1200 = 12.7 kts. 2 screws. 2 Yarrow boilers. Coal: 120 tons. Carries 400 tons water.

Water Carriers—continued.



TEVERE (1897). 960 tons. Guns: 2—1 pdr. H.P., 620 = 11 kts. 1 screw. 2 Thornycroft boilers. Coal: 150 tons. Carries 320 tons water.

(There are 28 smaller Tanks, besides 7 building.)

IMPERIAL JAPANESE NAVY.

Revised, at the Navy Department, Tokyo, by courtesy of H. E. The Minister of Marine, 1929.

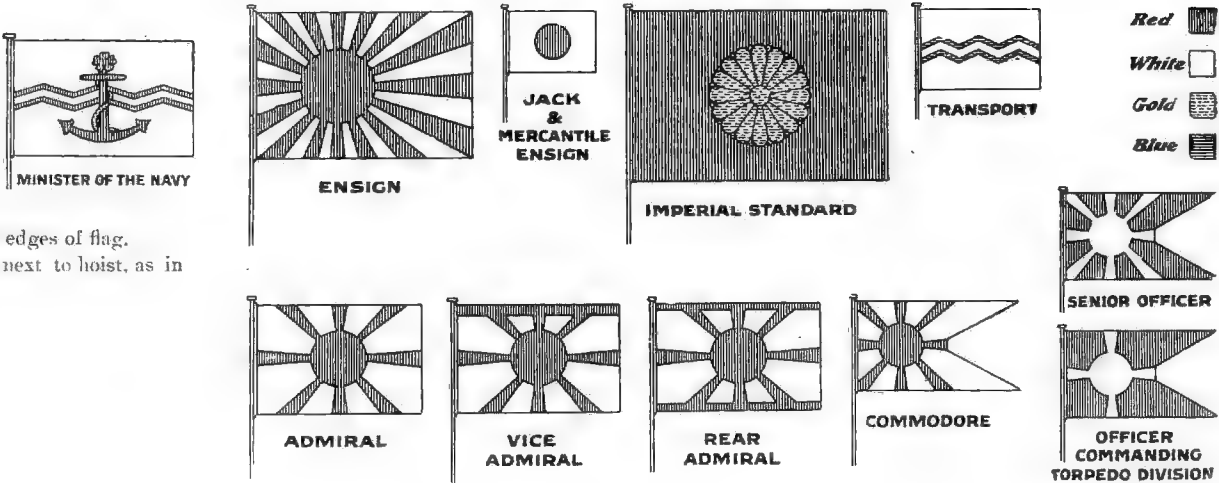
Flags.

- 1 *Standard of H.I.M. the Empress.*—A forked flag with a gold chrysanthemum on a red ground (as sketch for Imperial Standard).
- 2 *Standard of H.I.H. the Crown Prince.*—As Imperial Standard, but the chrysanthemum is enclosed in a square white border set a little distance within edges of flag.
- 3 *Imperial Princes and Princesses.*—A square white flag, with red border run round edges of flag and gold chrysanthemum in centre.
- 4 *Duty Flag.*—As sketch for transport, but white stripes over red ground.
- 5 *Repair Ship Flag.*—As transport flag, but with red stripes along upper and lower edges of flag.
- 6 *Pendant for Men of War.*—Usual narrow triangulated shape, with Rising Sun next to hoist, as in sketch for Commodore.

Minister of Marine: Admiral Hyo Takarabe.
Chief of Naval Staff: Admiral Suzuki, K.C.B.
Naval Attaché, London: Commander Prince Tadashige Shimazu.
Assistant Naval Attaché, London: Lieut.-Commander T. Kondo.

Mercantile Marine.

(From "Lloyd's Register," 1929 figures).
Total gross tonnage, 4,187,652.



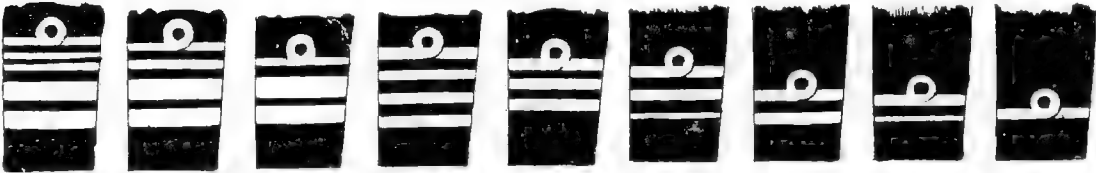
Personnel and Uniforms.

INSIGNIA OF RANK—EXECUTIVE OFFICERS—SLEEVES. (Changed to this; 1908).

Navy Estimates.

1927-28, Yen 255,426,625.
1928-29, Yen 262,444,743.
1929-30, Yen 268,000,000.

Personnel: About 75,000, all ranks.



Sho-i Ko-hoshei.
Midshipman.

	Executive Branch:	Tai-sho.	Chu-sho.	Sho-sho.	Tai-sa.	Chu-sa.	Sho-sa.	Tai-i.	Chu-i.	Sho-i	
	Corresponding British:	Admiral	Vice-Ad.	Rear-Ad.	Captain.	Commander.	Lient. Com.	Lieutenant.	Sub-Lieut.	Acting Sub-Lieut.	
BAND											
between stripes.	(BRANCHES, with but after Executive).										
Violet	Kikwan (<i>Engineer</i>) (with executive rank and curl.										
Red	Gun-i (<i>Doctor</i>).										
White	Shukei (<i>Paymaster</i>).										
Brown	Zosen (<i>Constructor</i>).										
"	Zoki (<i>Engineer-Constructor</i>).										
Purple-Brown	Zohai (<i>Gun Constructor</i>).										
Blue	Suiro (<i>Hydrographer</i>).										

The senior officer of any branch on board the ship always carries the affix "cho." Thus: Ho jitsu-cho (*Gunnery*), Sui-rai-cho (*Torpedo*), Ko-kai-cho (*Navigator*), Gun-i-cho (*Senior Doctor*), Shukei-cho (*Senior Paymaster*).

Undress is a military tunic (dark blue) with the sleeve insignia of rank in black braid only, with curl, and with collar insignia of rank and branch.

CAP.
The cap is the same as the British (but without gold embroidery in the senior ranks).

CAP BADGE.
Small anchor, surrounded by cherry leaves.

Principal Naval Guns.

Notation.	Calibre.	Length in calibres.	Model.	Weight of Gun.	Weight of A.P. shot.	Maximum Initial Velocity.	Maximum penetration firing A.P. capped at K.C.		Danger space against average ship, at			Service rate of Fire Rounds per minute.
							5000 yards.	3000 yards.	10,000 yards.	5000 yards.	3000 yards.	
	inches.			tons.	lbs.	F. S.	inches.	inches.				
HEAVY.	16 14	45 45	K.M. V	82 52	1400...	...	...	...	...	...	...	...
MEDIUM.	8	45	O	15½	188	2800	7½	10½	105	430	625	1
	8	45	A	17	250	2740	7½	10	110	425	600	12
	8	40	A	15½	250	2580	5½	7½	100	400	580	12
	6	45	(O4)	8½	100	3000	4½	6½	75	250	475	...
	6	50	V	8	100	3000	4½	6½	75	250	475	6
	6	40	A	6½	100	2500	3	4½	65	210	435	7
	6	40	A	6	100	2220	2½	4	35	150	360	8
	5.5	50	...	6½	82	2725	...	...	...	...	...	12
	4.7	45	...	...	...	...	...	...	...	...	...	...
	4.7	40	A	2	45	2150	...	2½	...	...	...	8
	4.7	32	A	1½	36	1938	...	...	...	...	...	8-6

LIGHT	3 3	...	...	...	14 12	...	...	...	...	...	...	...
AA	3	40	...	...	13	...	...	...	...	...	...	...

In the Model column A=Armstrong; O=Obukhoff (Russian); V=Vickers.

K.M.=Kure Arsenal and Muroran Steel Works.

16 inch, 45 cal. in *Nagato* and *Mutsu*.

14 inch, 45 cal. *Fuso* class (2), *Kongo* class (4); in *Ise* class (2).

8 inch, of a new model in cruisers of *Nachi*, *Kinugasa*, and *Kako* classes.

6 inch, 50 cal. in *Fuso* class (2), *Kongo* class (4).

6 inch, 40-45 cal. in 1st and 2nd Class Cruisers, &c.

5.5 inch in *Nagato* class (2), *Ise* class (2), *Tatsuta* class (2), *Kuma* class (13).

(All details tabulated above are unofficial.)

Gunnery Notes.

Heavy and Light Marks of Directors have been perfected, both of which are being mounted in Capital Ships building, completing or in service. Type of Directors in Light Cruisers unknown. Nothing known of the system used; there is only a vague report of doubtful accuracy that the Japanese Director is "intermediate between the German Navy and 'Petravic' systems." They are mounted in towers, like British Navy, i.e., in Capital Ships Main Director Tower at masthead, Light Directors on bridges, or legs of tripod masts.

Range-finders.—Barr & Stroud is used. In Capital Ships, large-base R.F. are mounted on turret roofs, as in British Navy.

General efficiency and accuracy of Fire Control system in latest ships believed up to standard of British and U.S. Navies.

Torpedoes.

21 inch, said to be a Japanese modified Whitehead heater type; effective range, 10,000 yards. Is said to be powerful and very accurate in running and depth-keeping. A specially heavy mark may be used for tubes of Battleships and Battle Cruisers.

A special 18 or 21 inch mark of short range and heavy charge is said to be built for Submarines; also a short-range (2000 yards) mark for torpedo-dropping planes.

Output.—Kure Arsenal, Muroran Iron Works and Osaka Iron Works produced 320 torpedoes per annum during the War. Kōbē Steel Works said to have produced 250 torpedoes during 1920. Present capacity (excluding torpedoes ordered from Messrs. Whiteheads, Weymouth), probably over 600 torpedoes per year. Mitsu Bishi Zo K. and Kawasaki Co. probably manufacture torpedoes. Five private establishments are known to be engaged in this work.

General.

It is officially confirmed (1929) that all battleships and battle cruisers prior to *Nagato* class will be given some special additional protection against aircraft and submarine attack.

All battleships and battle cruisers, and some cruisers and light cruisers are being equipped for carrying two or more seaplanes.

It has been stated that torpedo nets are being discarded, but "Fighting Ships" is officially informed that nothing has yet been done in this matter.

NOMENCLATURE AND "KANA" OF JAPANESE WARSHIPS.

The system of nomenclature now being used is thus:—

Battleships, Battle-Cruisers and Aircraft Carriers: Named after Provinces and Mountains.

Cruisers: Named after Rivers and Towns.

Destroyers (First Class): Named after Winds.

Destroyers (Second Class): Named after Trees, Flowers and Fruits.

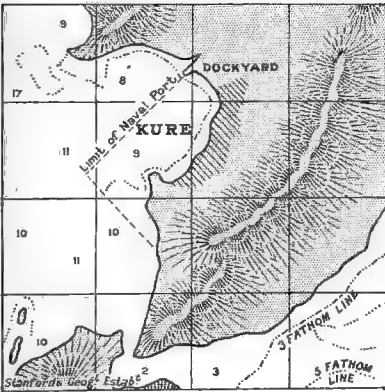
JAPAN—Dockyards.

JAPANESE DOCKYARDS.

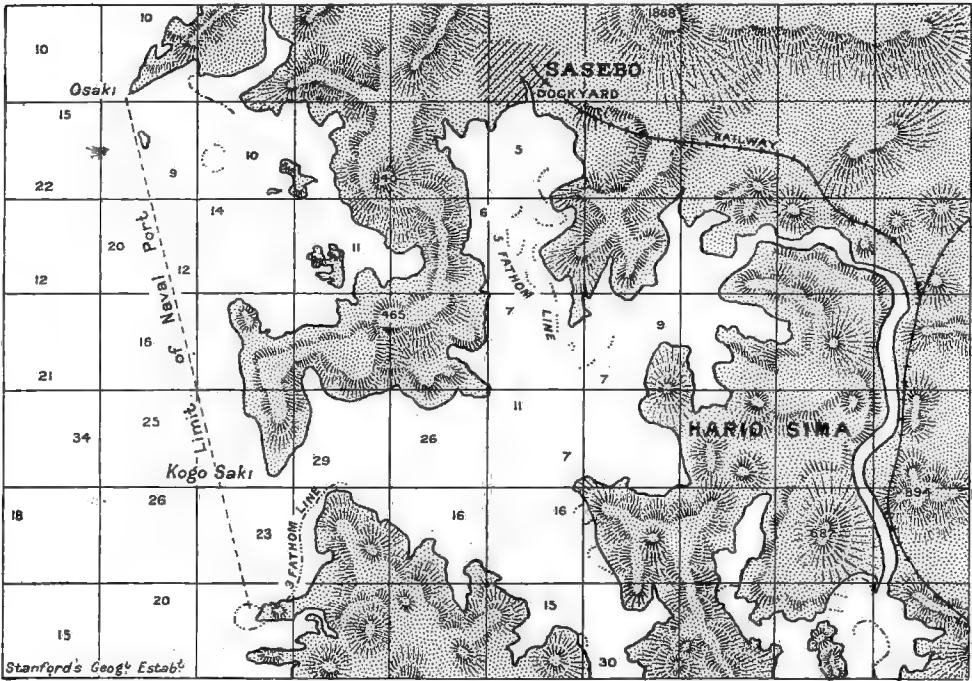
Divided into 2000 yard squares. Uniform scale. Soundings in fathoms. Heights in feet.



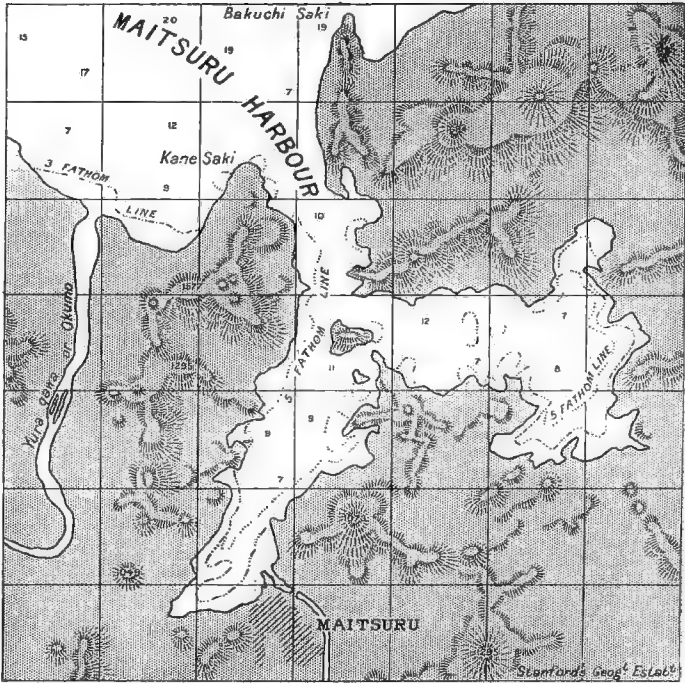
YOKOSUKA.



KURE.



SASEBO.



MAIDZURU. (Described on following page.)

Imperial Dockyards. Principal Naval Harbours (Ching-ju-fu).

***YOKOSUKA** (in Sagami). Fleet Base, Dockyard, T.B.D. Submarine and Aircraft Stations. Fortified. Six ships, one for Battle-Cruisers, two for Dreadnoughts, three smaller. Docks : No. 5, 747 × 115 × 41 feet, able to take any ship, and No. 4, 538 × 98½ × 32 feet. Also one dock (No. 2) 447 × 94½ × 29 feet ; two others : No. 1, 298 × 82 × 21 feet ; No. 3, 265 × 45 × 18 feet. Naval Engineering Academy here. Naval Aviation Stations at Oihama and Kasumigaura. Admiralty Chart No. 997.

*This base was put out of action by the earthquake of September, 1923, but steps have been taken to reconstruct it on a scale fully equal to its former status ; though it is reported that for the present only torpedo craft and submarines will be laid down there.

KURE (in Aki). Fleet Base, Dockyard, T.B.D., and Aircraft Base. — slips. This yard is in future to specialise in building large ships and providing ordnance and munitions for the fleet. Docks No. 1, 413 × 58½ × 28 feet ; No. 2, 485½ × 81 × 35½ feet ; No. 3, 744 × 100 × 34 feet. Perhaps a fourth big dock. Ordnance and Armour Plate built here. Cadets Academy at Etajima. Admiralty Chart No. 3469.

SASEBO (in Hizen). Fleet Base, Dockyard, T.B.D. and Aircraft Base. Slips for Light Cruisers, Torpedo Craft, Submarines, &c. Specialises in building engines and machinery. There are five docks here : (1) 435 × 94 × 29 ; (2) 475 × 85 × 32 ; (3) 538 × 93½ × 33 feet ; (4) 777 × 111 × 38 feet ; (5) 610 × — × — feet. There is also a floating dock for Torpedo Craft here (1500 tons). There are Naval Aviation Stations at Sasebo and Omura. Admiralty Chart No. 359.

JAPANESE DOCKYARDS.

Dockyards—JAPAN

Lesser Naval Harbours (Yoko).

MAIDZURU (or MAIZURU) (in Tango). Admiralty Chart No. 2174. Destroyers built here. Light Cruiser slips projected 1919-20. One dock 528 feet long, one 735 feet long completed 1913, and two smaller ones for torpedo craft.

CHINKAI (Korea), previously known as Masampo.

TOKUYAMA BAY (150 miles N.E. of Nagasaki). Coaling Station and Fleet Anchorage.

HIROSHIMA. Naval aircraft constructed here.

OMINATO. Torpedo and aircraft base. } Repair Stations for T.B.D., &c. Small 1500 ton
BAKO (Pescadores). } Floating Dock at each.

Note.—RYOJUN (Port Arthur) and DAIREN (Dalny) are no longer naval ports; particulars formerly given concerning same have therefore been deleted.

Coinage.

Yen (100 sen)=2s. British, 48 cents U.S.A., *about*.

Principal Mercantile Ports.

Yokohama, Hakodate, Nagasaki, Moji, Kobé, Dairen (Dalny).

Overseas Possessions.

Taiwan (Formosa), Karafuto (Saghalien), Pescadores, Chosen (Korea). Kwangtung Peninsula in Yellow Sea leased from China. Also Mandatory Power for administration of Marshall, Pelew, Caroline and Marianne Islands, in N.W. Pacific.

PRINCIPAL PRIVATE ESTABLISHMENTS,

Building Warships.

(Zosen Kaisha = Shipbuilding Co.)

ASANO ZOSEN KAISHA, Ushioda, Tsurumi. Six concrete slips, 600 feet long, 80-ton floating crane, etc.

FUJINAGATA COMPANY, Osaka. Two small docks. Six slips. Builds destroyers.

HARIMA DOCK COMPANY, Aioi. Dock, 428×54×20 feet.

ISHIKAWAJIMA COMPANY, Tokyo. Extended 1917. At Tokyo: graving dock, 270×41½×12 feet. Builds destroyers. Seven slips.

KAWASAKI DOCKYARD COMPANY, Hyogo Works, Kobé, and at Yoshiura, near Kure, and at Dairen (or Dalny), North China. Build, engine, and equip warships and mercantile vessels of all classes. At Kobé: Six building slips, *i.e.*, one of 720 feet, one of 550 feet, one of 530 feet, one of 475 feet, one of 420 feet, and one of 410 feet. One graving dock 407×64×24 feet. Also several patent slips. Floating cranes: one 200-ton, and several smaller. Yard covers 133 acres, and has a water-front of 1000 metres. Total number of persons employed 12,000. Licensees for the Curtis Marine Steam Turbine, Ansaldo-Laurenti types of submarines, and the Ansaldo-Fiat Diesel engines. Submarines built at Yokura D.Y. near Kure. Owing to the collapse of its finances, this concern's shipbuilding activities were threatened with suspension in 1927, but "Fighting Ships" is officially informed that arrangements have been made to resume work.

MITSU BISHI ZOSEN KAISHA:—

(a) Kobé Yard.—Build, engine, and equip destroyers and mercantile vessels. Three building slips: two of 510 feet and another (length not known). Floating docks: one 12,000-ton, one 7000-ton and one 1600-ton. Large cranes: one 100-ton sheer-leg and one 40-ton floating crane. Yard covers 46 acres, with a water-front of 1700 metres. Number of persons employed 7500.

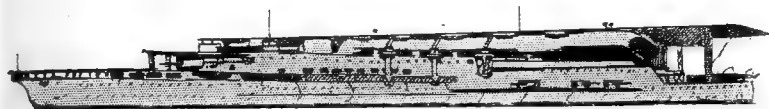
(b) Nagasaki Yard.—Warships and mercantile vessels of all types built here; also engines, boilers, equipment, etc. Seven building slips: 767 feet, 605 feet, 602 feet, 540 feet, 510 feet, 451 feet, and 418 feet long respectively. Three graving docks, *viz.*: No. 3, 728×96½×34½ feet; No. 1 (Tategami), 523×89×26½ feet; and No. 2 (Mukaijima), 371×66×23½ feet. Large cranes: one 150-ton hammer crane; one 60-ton and one 34-ton floating cranes. Yard covers 127 acres, and has a water-front of 2750 metres. Number of persons employed 15,500. Licensees for the Parsons' Marine Steam Turbine.

(c) Hikoshima (Moji).—Docks here, (1) 360×60×25½ feet; (2) 450×74×25½ feet; (3) 1260×31×18½ feet.

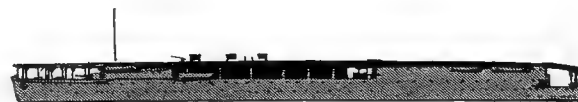
OSAKA IRONWORKS, Sakurajima, Osaka, Innoshima and Bingo. At Osaka: graving dock, 259×33×12½ feet.

URAGA DOCK COMPANY, Uraga. Builds light cruisers, destroyers, torpedo craft, and mercantile vessels; also builds boilers and engines, etc. Five building slips, *viz.*: two of 500 feet and three of 400 feet. Four dry docks: (1) 482½×70×35½ feet; (2) 448½×65½×25½ feet; (3) 469×68×29 feet; (4) 452×(60-69)×32 feet. Yard covers 37 acres, and has a water-front of 970 metres. Total number of persons employed 5000.

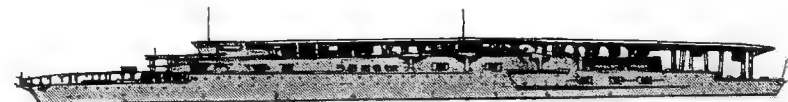
YOKOHAMA DOCK COMPANY, Yokohama. Graving docks: No. 1, 483½×93½×27½ feet; No. 2, 375×60½×26½ feet; No. 3, 481 (o.a.)×66½×21½ feet.



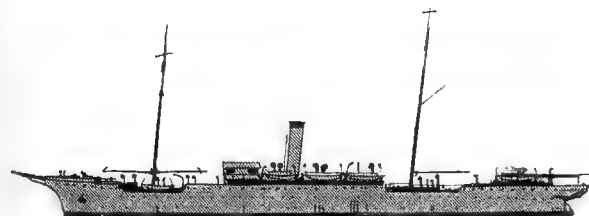
KAGA.



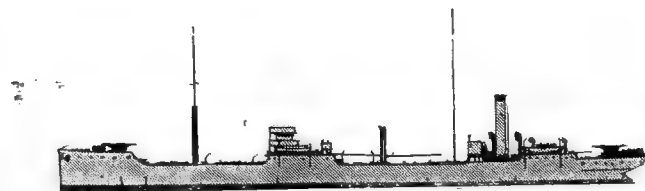
HOSHO.
(Aircraft Carrier.)



AKAGI.
(Aircraft Carrier.)



KARASAKI.
(Torpedo Depot Ship.)



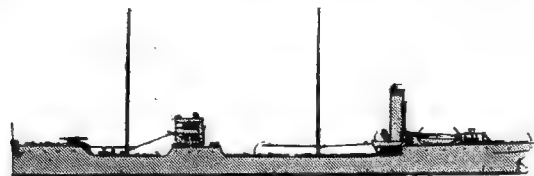
ERIMO class (9).
(Oilers.)



WAKAMIYA.
(Aircraft Tender.)



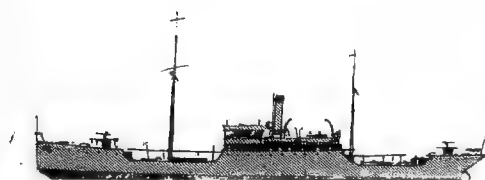
TAKASAKI.
(Store Ship.)



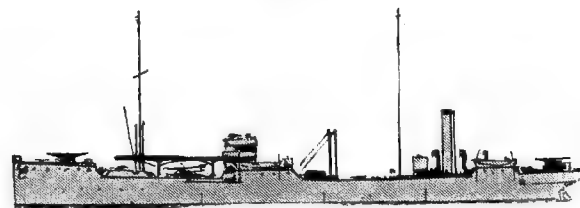
SUNOSAKI.
(Oiler.)



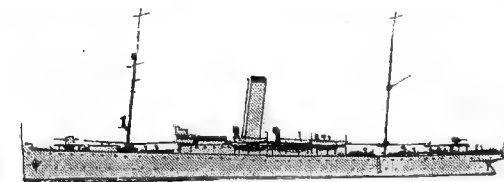
SEITO.
(Store Ship.)



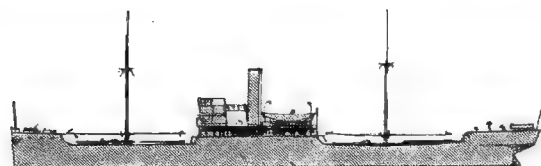
KOSHU.
(Surveying Ship.)



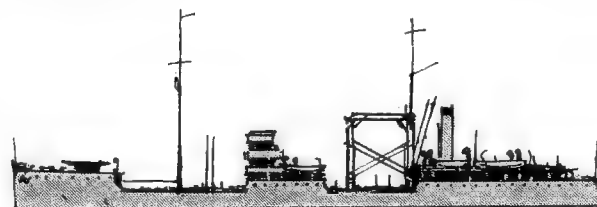
NOTORO.
(Aircraft Tender.)



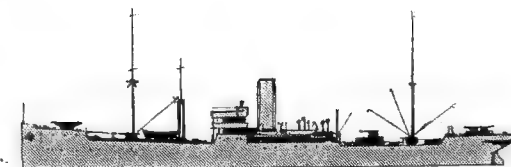
MANSHU.



NOSHIMA. MUROTO.
(Colliers.)



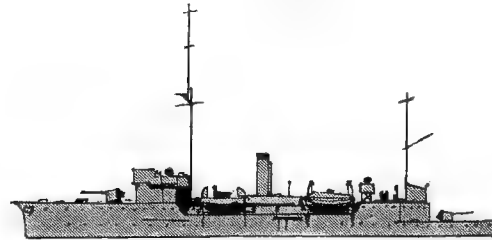
KAMOI.
(Tanker-Collier.)



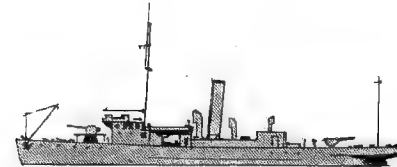
MAMIYA.
(Supply Ship.)



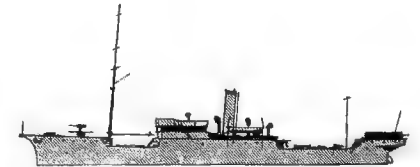
SHIRATAKA.



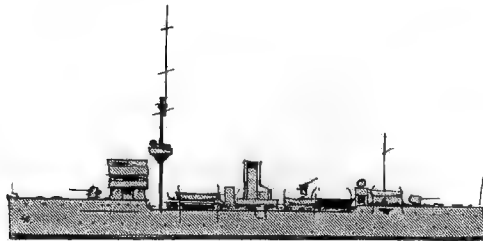
SAGA.



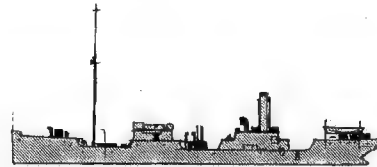
KUROTSUKI class (12).
(Mine Layers.)



KOMAHASHI.
(Destroyer Depot Ship.)



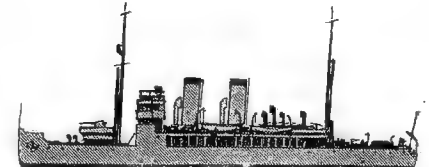
ATAKA.



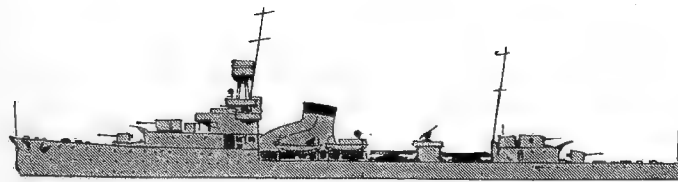
TSURUGIZAKI (Oiler).



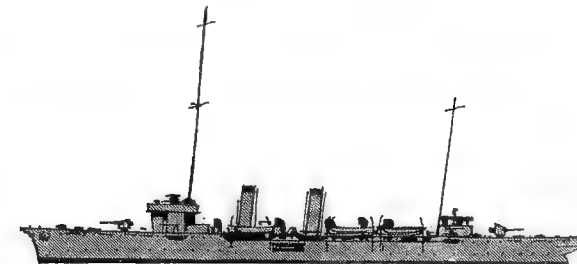
KATSURIKI (Mine Layer).



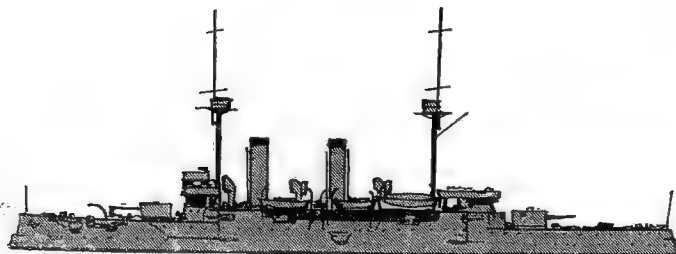
OTOMARI (Ice Breaker).



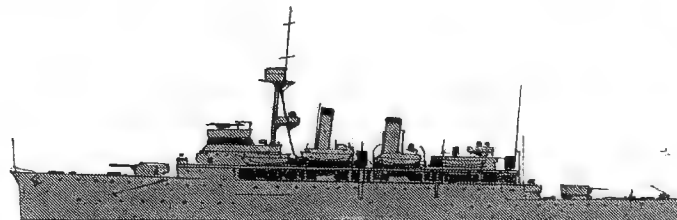
YUBARI.



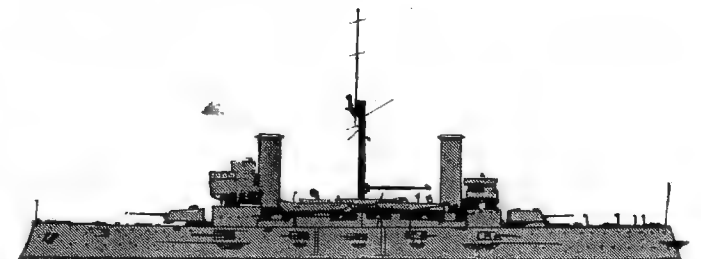
YODO.



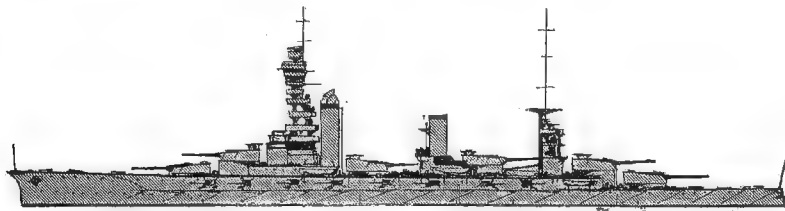
ASAMA
TOKIWA



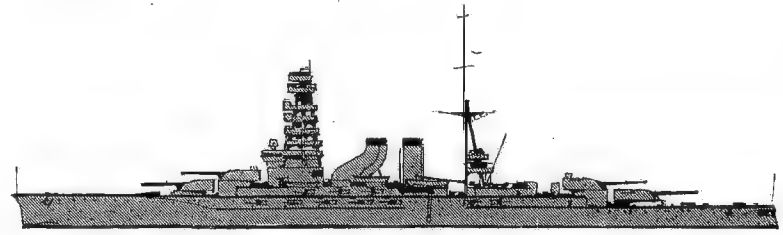
JINGEI. CHOGEI.
(Destroyer Depot Ships.)



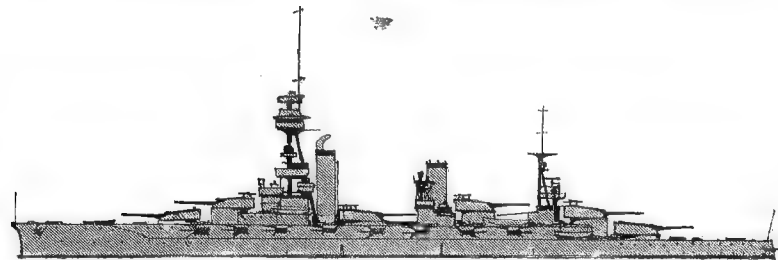
NISSHIN. KASUGA.



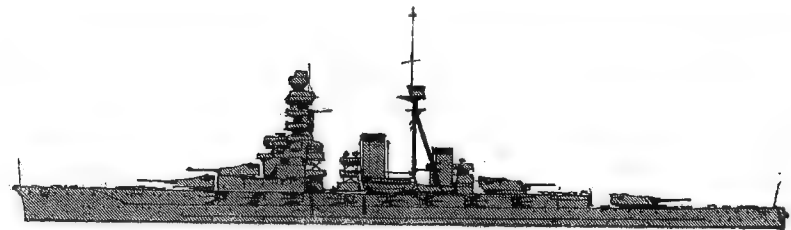
FUSO.



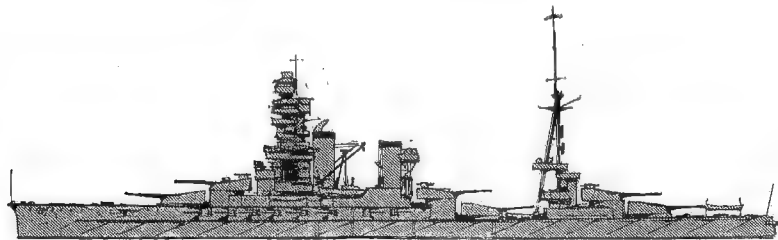
NAGATO. MUTSU.



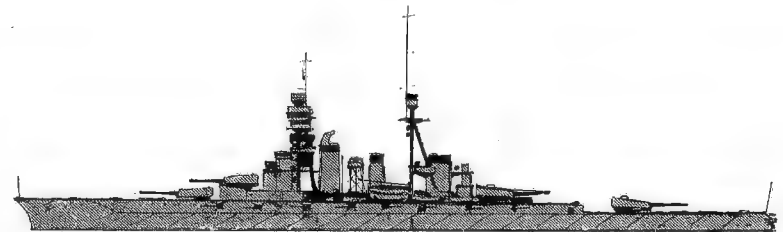
YAMASHIRO. (Rig to be altered as FUSO.)



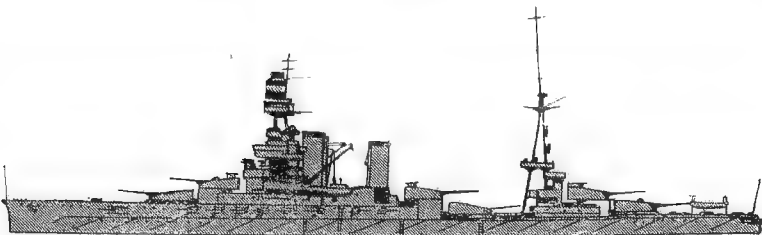
HARUNA.



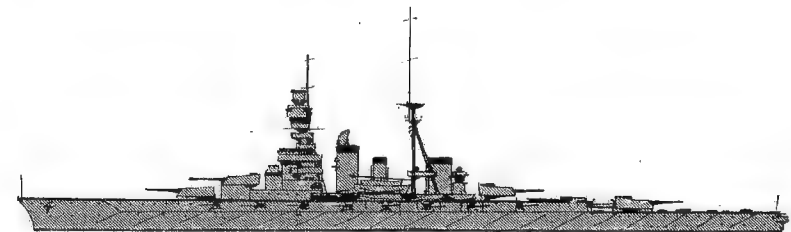
HIUGA.



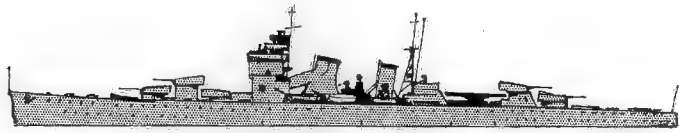
KONGO.



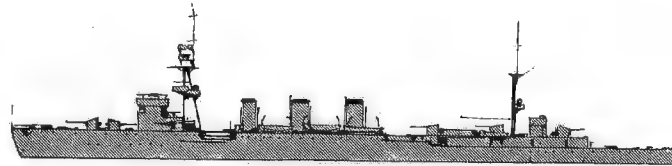
ISE.



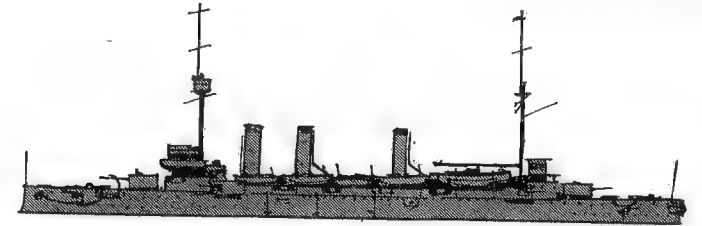
HIYEI. KIRISHIMA



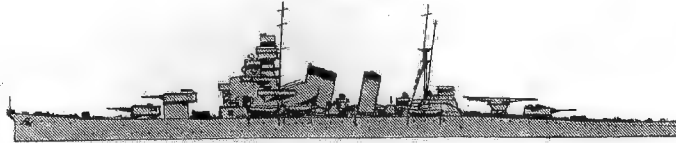
NACHI class (18).



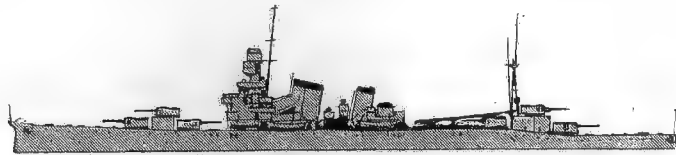
KUMA. TAMA. OHI.
KISO. KITAKAMI.



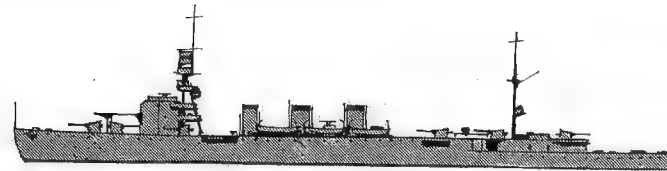
ADZUMA.



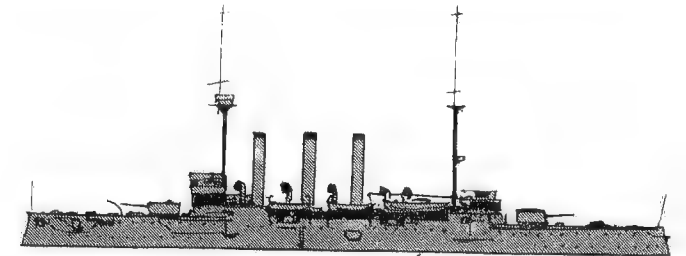
KINUGASA.
Aoba.



FURUTAKA.
KAKO.



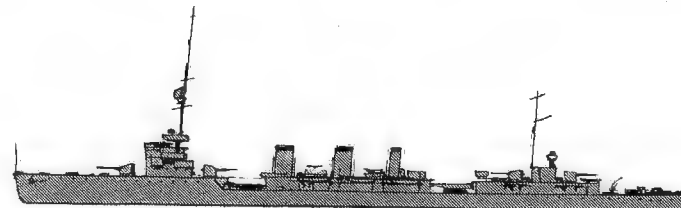
ISUDZU. NATORI. KINU.
NAGARA. YURA. ABUKUMA.



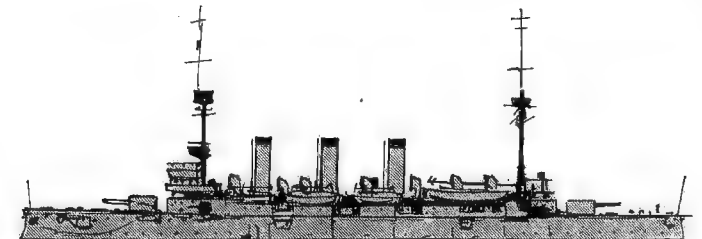
IDZUMO.
IWATE.



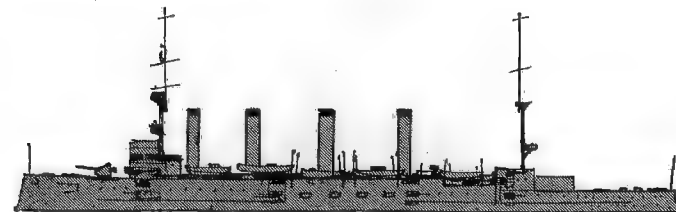
TONE.



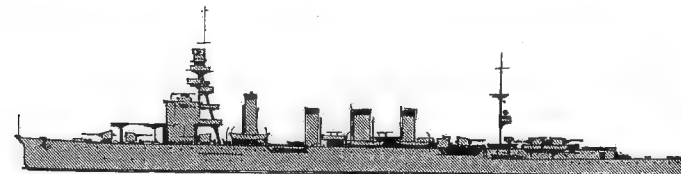
TATSUTA.
TENRYU. (To be fitted with Kite-balloon Tower foremast.)



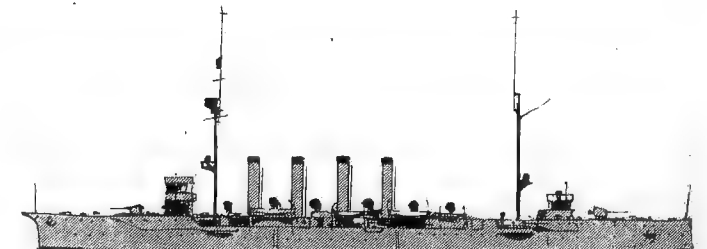
YARUMO.



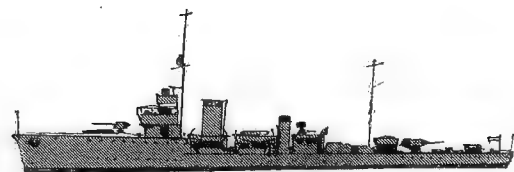
Aso.



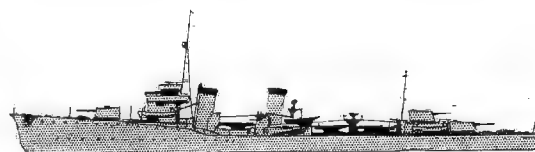
NAKA. JINTSU.
SENDAI (Spoon bow).



HIRADO. YAHAGI. CHIKUMA.



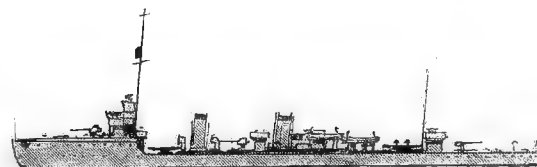
Minesweepers Nos. 1—6.



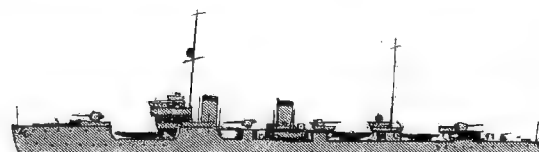
FUBUKI class (24).



KABA class (12).



MOMO class (10).



MINEKAZE class (15).



AMATSUKAZE class (4).



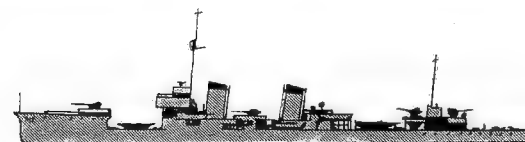
URAKAZE.



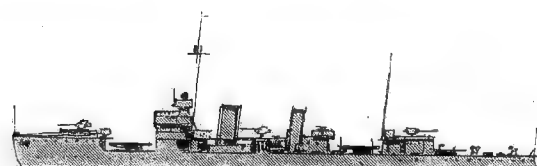
KAMIKAZE class (9).
(Note main mast and after guns.)



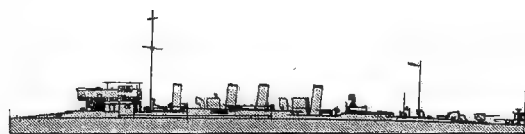
TANIKAZE. KAWAKAZE.



MUTSUKI class (12).
(Note bow and amidships t.t.).



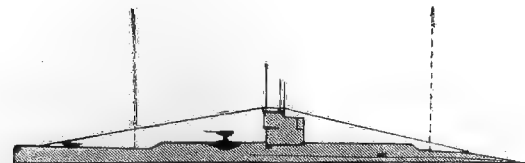
MOMI class (20).



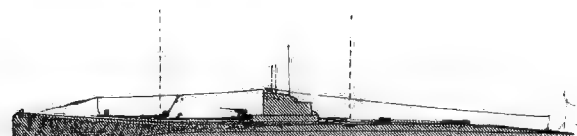
Minesweepers Nos. 7—12.



UMIKAZE. YAMAKAZE.



Ro. 51—56.



I. 51.



I. 21—26



Ro. 1—5.



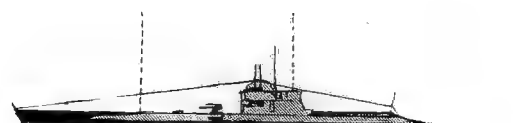
Ro. 29, 32.



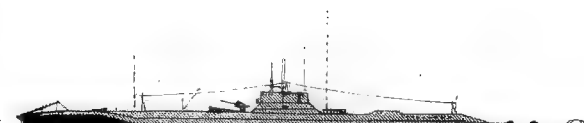
I. 52.



Ro. 11—12.
Ro. 16—24 (9).



Ro. 26, 27, 28.



I. 53—58.
(Deck flush from bow to C.T.)



Ro. 57, 58, 59

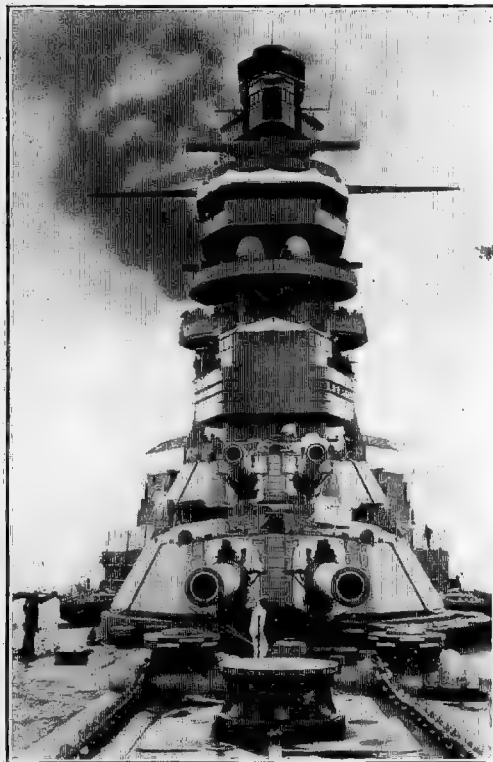


Ro. 60—68.



I. 1—5.

Illustrations for "Mutsu" class.



NAGATO.

1928 Photo.

These Notes are not from any official data.

Gunnery Notes.—16 inch guns can range up to 35,000 yards with 35° elevation. Arcs of fire: about 270-300° for Turrets Nos. 1, 2, 4. No. 3 about 320-330°. 5.5 inch guns about 120-130°.

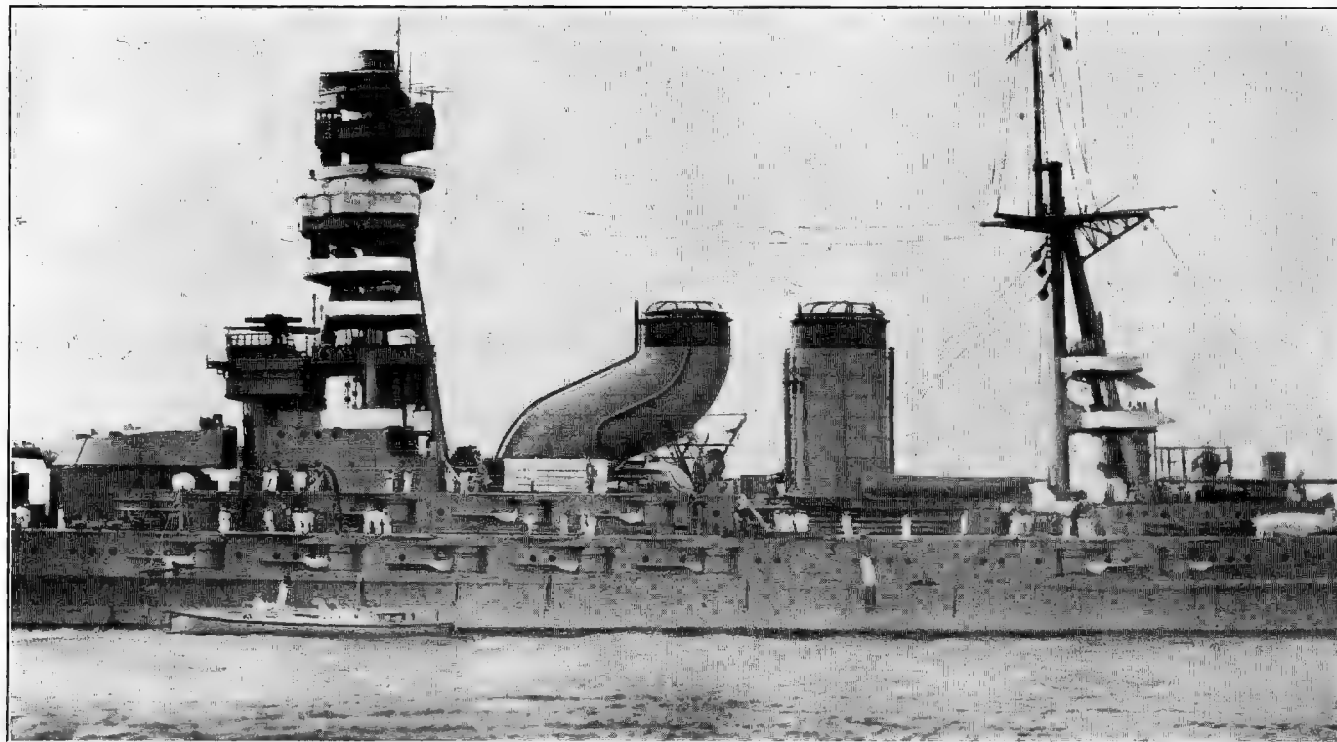
Armour and Protection Notes.—General scheme of armouring is believed to be akin to that for H.M.S. *Queen Elizabeth*. Protective decks are thickened in vicinity of magazines. Special protection below waterline is reported to be a "modified form of bulge" which does not interfere with speed.

Searchlights.—Ten 30 inch, distributed as eight to foremast, two to mainmast.

Aircraft Notes.—Three planes have been or are being added to the equipment of these ships.

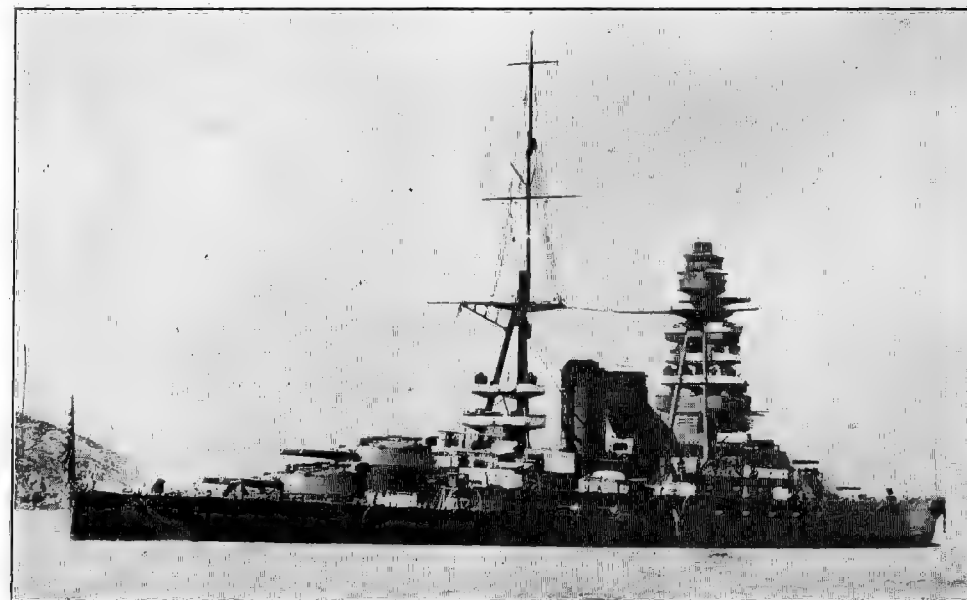
Appearance Notes.—The outstanding feature is the colossal heptapodal foremast, with its numerous tops and bridges, for Heavy and Light Directors, Range-Finders and Searchlights. Two of its supporting legs rake forward, two aft, and one out to each beam. The central trunk is so thick, it accommodates an electric lift, running between Upper Deck and the Main Director Tower at the masthead. This mast is said to have been evolved after many experiments had been made to determine the most rigid and vibrationless structure. It is claimed to be almost indestructible by shell-fire, but its weight, and the target offered must be enormous. The shape of the stem, which differs from that of the usual Japanese "yacht" bow, should also be noticed. The trunked fore-funnel, as fitted 1924-25, renders the appearance of these ships still more distinctive.

General Notes.—*Nagato* provided for by 1916 Programme, and laid down in dry dock at Kure D.Y. during the summer of 1917, floated out Nov. 9th, 1919. *Mutsu* provided for by 1917 Programme; estimated cost is about eight million pounds for *Mutsu*. Plans for this type were completed during the spring of 1916, and the Japanese claim that the design ante-dates the U.S.S. *Maryland* class (with same main armament) by four months. As the first battleship in the world to be completed with 16 inch guns, she is said to be a most successful ship in all respects. Her design and construction certainly reflect the highest credit on her authors and builders.



MUTSU.

1929 Photo.



NAGATO.

1929 Photo.

See next page for plans
and general details.

(NAGATO CLASS—2 SHIPS).

とがな **NAGATO** (Nov. 9th, 1919)

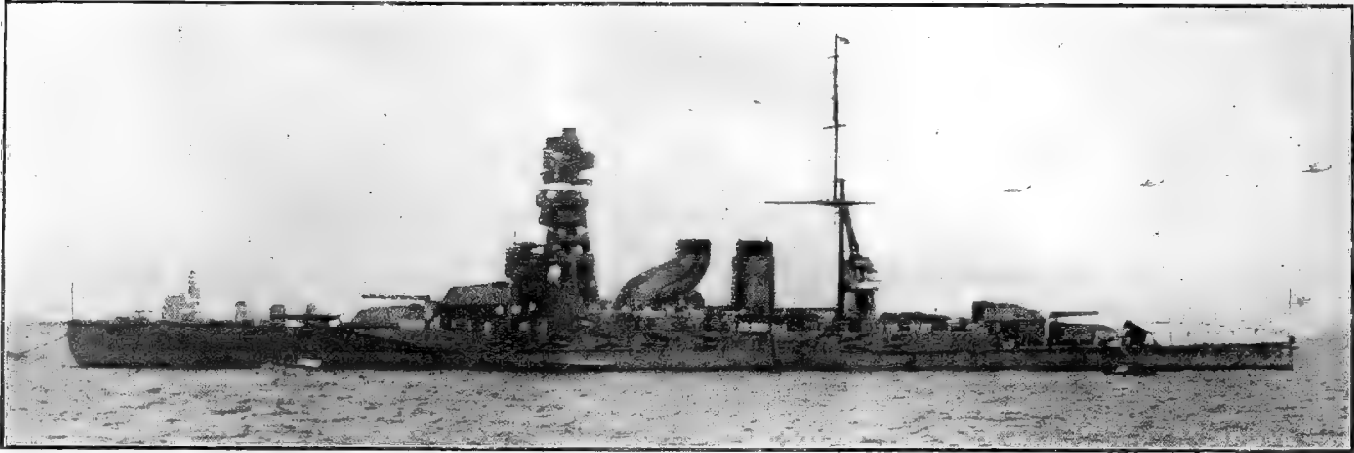
つむ **MUTSU** (May 31st, 1920).

Normal displacement, 33,800 tons.

Complement, { 74 officers } = 1336.
 { 1258 men }

Length, { 660' 7" p.p. } Beam 95 feet. Draught, 30 feet max.
 { 700' 0" o.a.* }

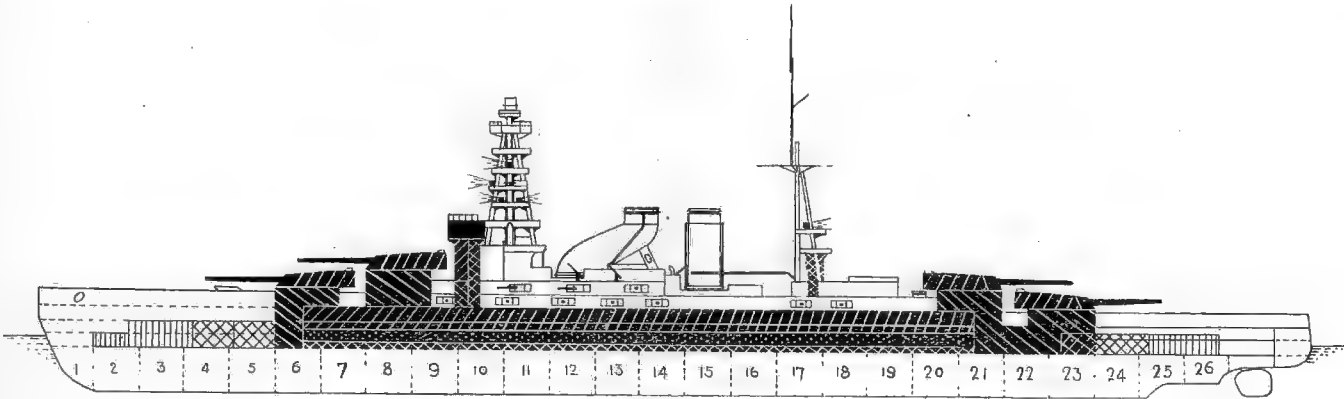
* Approximate.



NAGATO.

Photo added 1927.

Guns (Japanese):
8—16 inch, 45 cal. } **Dir. Con.**
20—5.5 inch, 50 cal. }
4—3 inch (13 pdr.) 40 cal. AA.
4 M.G.
4 Landing.
Torpedo tubes (21 inch):
4 above water.
4 submerged.
Searchlights: 10.

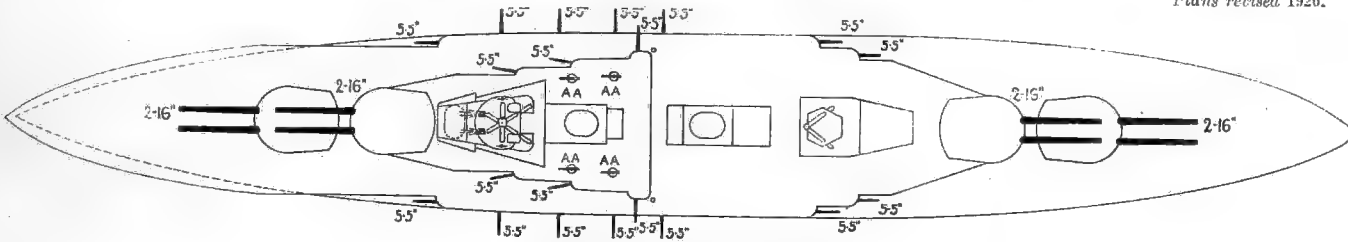


Plans revised 1926.

Armour: (unofficial)*
13" or 12" Belt
8"—4" Ends
3½" Deck.....
7" deck above magazines,
 boilers and engine
 rooms.
14" Turrets
" Battery
12" Conning tower
 (Special anti-torpedo
 protection.)

* See notes on opposite page.

Ahead:
4—16 inch.
6 to 8—5.5 inch.



Broadside: 8—16 inch, 10—5.5 inch.

Astern:
4—16 inch.
4—5.5 inch.

Machinery: Geared turbines. Screws. Boilers: 12 Kampon. Designed H.P. 46,000 = 23 kts.
Fuel: (coal and oil) normal tons, maximum over 5000 tons.

Name	Builder	Machinery	Laid down	Completed	T'ials	Boilers	1st Period ends.
Nagato Mutsu	Kure D.Y. Yokosuka D.Y.	Kure D.Y. Yokosuka D.Y.	28 Aug. 1917 1 June, 1918	25 Nov. 1920 24 Oct. 1921	48,000 = 23.5 = 23.4	Kampon {	1928 1929

1915 BATTLESHIPS.

世 い, ISE (Nov., 1916),

か り ひ HIUGA (Jan., 1917).

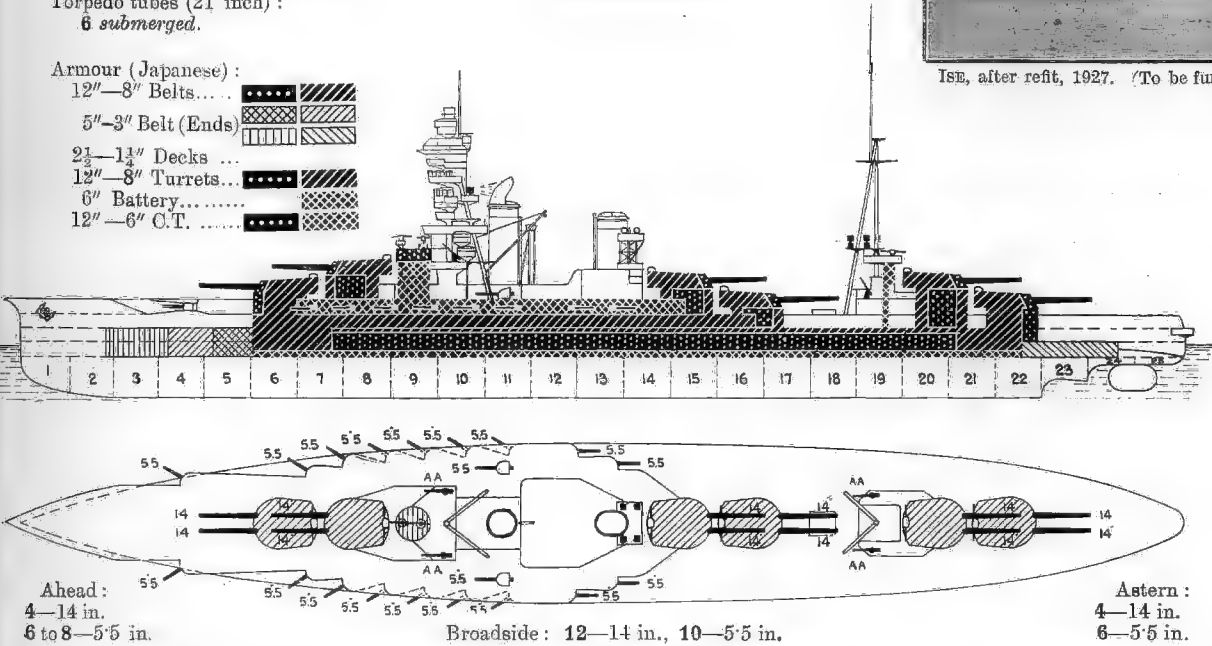
Normal Displacement, 31,260 tons. Complement, 1,360.

Length (p.p.) 640 feet. Beam, 94 feet. Max. draught, 28½ feet. Length (o.a.), 683 feet.

- Guns (Japanese):
12—14 inch, 45 cal. } Dir.
20—5.5 inch, 50 cal. } Con.
4—3 inch (13 pdr.) 40 cal. AA.
Torpedo tubes (21 inch):
6 submerged.

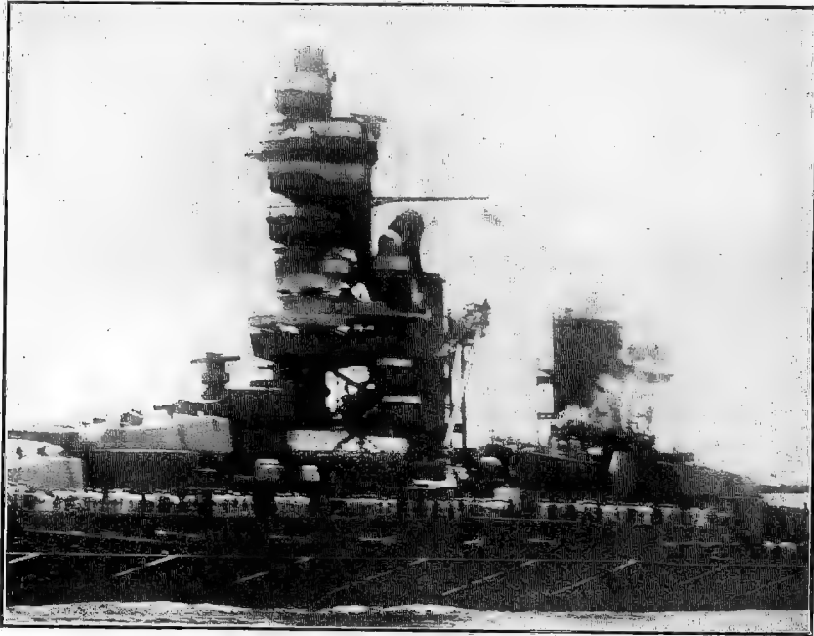
(Plan redrawn, 1928.)

- Armour (Japanese):
12"—8" Belts.....
5"—3" Belt (Ends).....
2½—1¼" Decks ...
12"—8" Turrets.....
6" Battery.....
12"—6" C.T.



ISE, after refit, 1927. (To be further refitted and given new mainmast, 1929.)

Photo added 1927.



HIUGA. (Detail view.)

Photo added 1927.

General Notes.—Built under the 1914 Naval Programme. These ships are an improved and slightly faster *Fuso* type. It is unofficially reported that they are strongly protected against aerial attack by three specially thick protective decks over vital parts of the hull. Special attention is reported to have been paid to the rapid replenishment of fuel, stores, ammunition, &c. Usual internal protection against mine and torpedo explosions by minute sub-division, wing bulkheads over machinery and magazine spaces, net defence for nearly entire length, &c. 10—30 inch searchlights, six on foremast, four on mainmast in *Ise*; four on foremast, two on funnel, two on mainmast in *Hiuga*. Reconstructed 1926-27, additional tops being fitted.

Gunnery Note.—Maximum elevation of 14 inch guns reported to be 25°.—(Unofficial).

Aircraft Note.—Three planes added to equipment, 1927.

Machinery: Brown-Curtis turbines in *Ise*; Parsons turbines in *Hiuga*. 4 screws. Boilers: 24 Kansei.* Designed H.P. 45,000=23 kts. Fuel: normal 1000 tons; maximum 4000 tons coal +1000 tons oil.

*General Note concerning boilers of these and certain other ships: "Kansei-Hombu" is a Japanese Admiralty type of W.T. boiler, resembling Yarrow type, with Japanese modifications.

Name	Built by	Machinery	Laid down	Completed	Trials. H.P. = kts.	1st Period ended.
<i>Ise</i>	Kawasaki Co.	Kawasaki Co.	May '15	Dec. '17	= 23.3.	1925
<i>Hiuga</i>	Mitsu Bishi Co.	Mitsu Bishi Co.	May '15	Apr. '18		1926



HIUGA.

1929 Photo.



HIUGA.

1928 Photo.



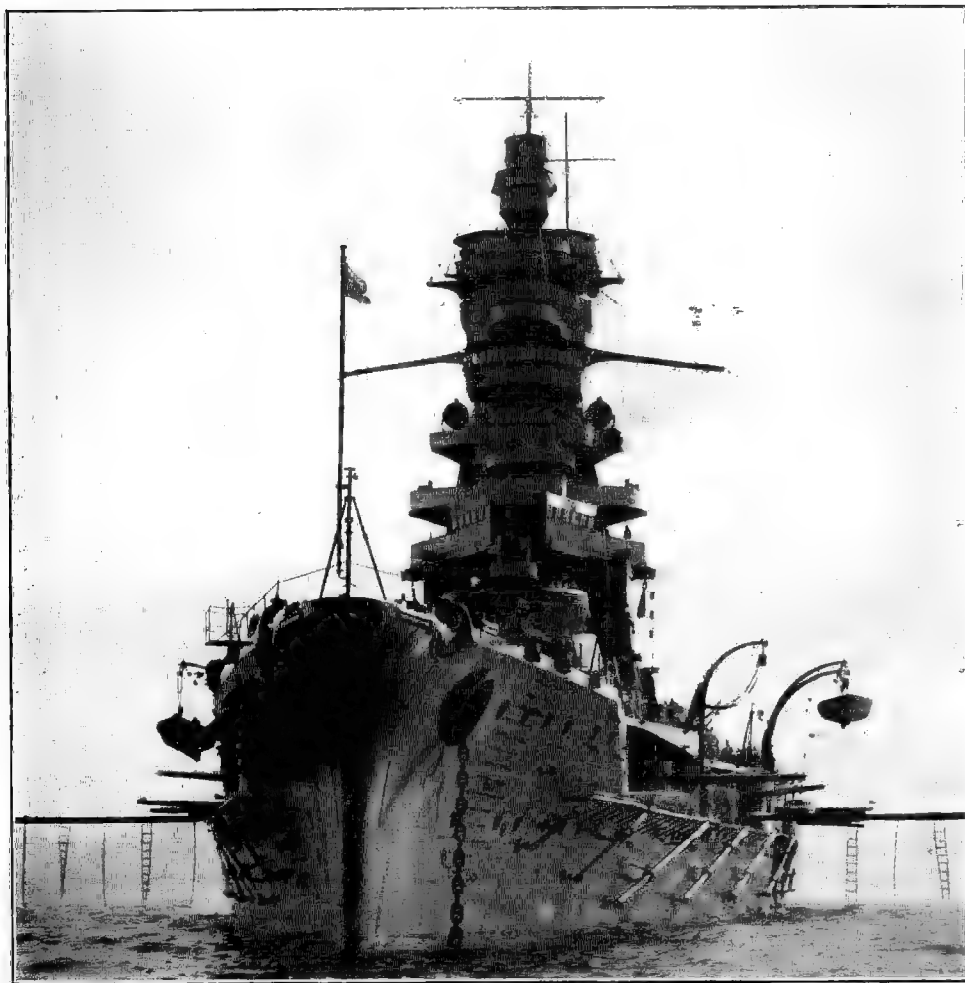
HIUGA.

1928 Photo.



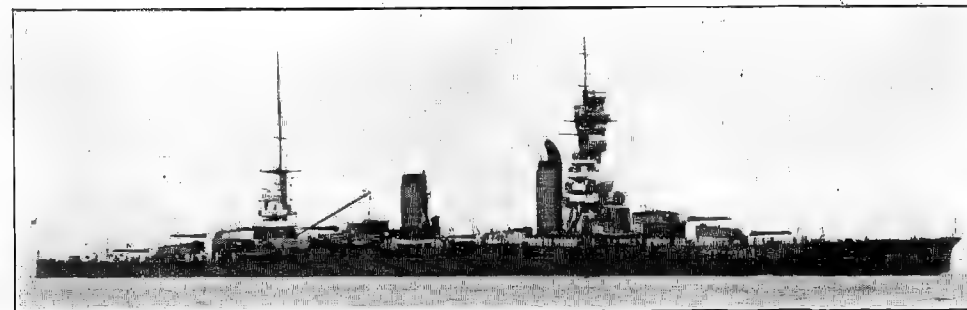
ISE.

Photo added 1926.



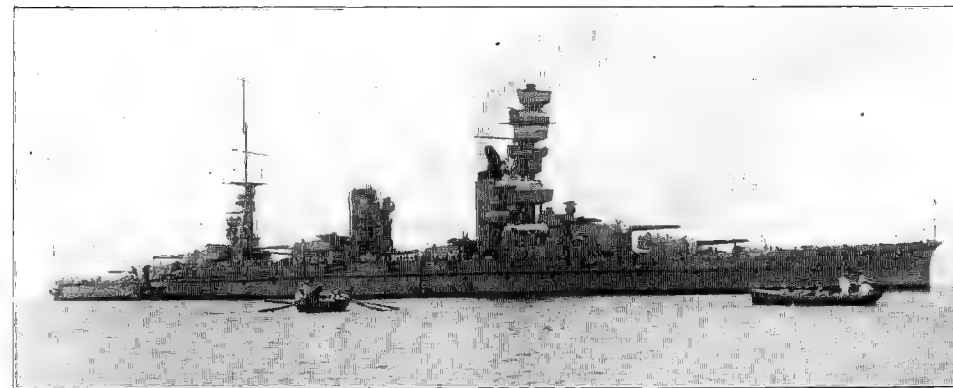
HUGA.

1928 Photo.



FUSO.

1928 Photo.



YAMASHIRO.

1929 Photo.

ふさふ **FUSO** (March, 1914),

ろしまや **YAMASHIRO** (Nov. 1915),

Normal Displacement, 30,600 tons.

Complement, 1243 and 1272.

Length { (p.p.) 630 feet. } Beam, 94 feet. Max. draught, 28½ feet.
(o.a.) 673 feet. }

Guns (Japanese):

12—14 inch, 45 cal. } Dir. Con.

16—6 inch, 50 cal. }

4—3 inch (13 pdr.), 40 cal., AA.

4 machine.

4 landing.

Torpedo tubes (21 inch):

6 submerged.

Armour—continued.

12" & 6" C.T.

(Bulkheads 12" to 4")

2" & 1½" Decks

—" Roofs { Gunhouses

C.T. }

Searchlights: 10—30 inch.

Armour:

12"—8" Belt (amidships)

5", 4½", 4" Belt

(bow)

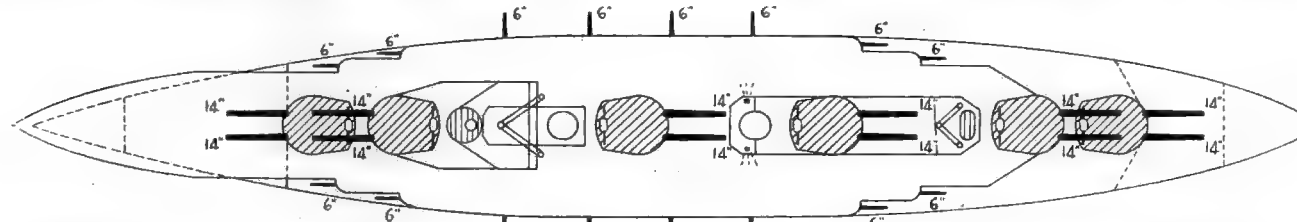
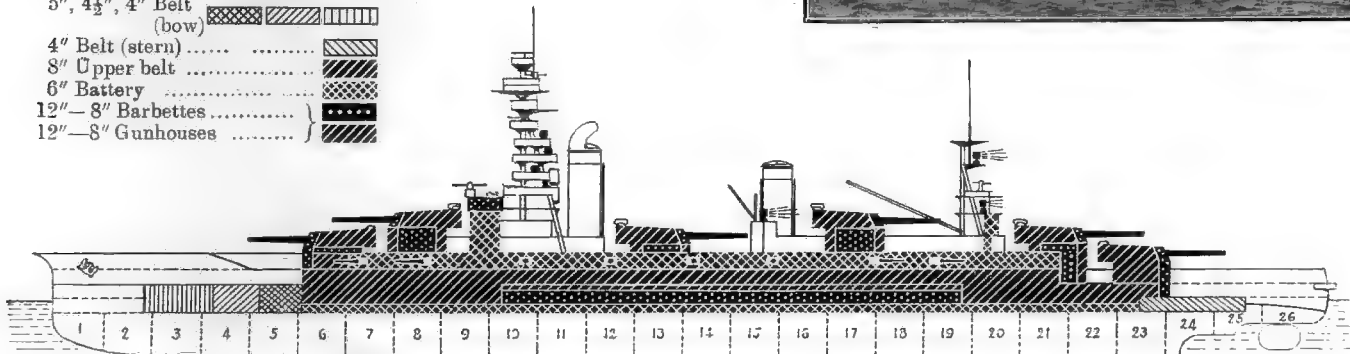
4" Belt (stern)

8" Upper belt

6" Battery

12"—8" Barbettes

12"—8" Gunhouses



Ahead:

4—14 in.

4—6 in.

Broadside: 12—14 in., 8—6 in.

Astern:

4—14 in.

4—6 in.

Machinery: Brown-Curtis turbines. 4 screws. Boilers: 24 Miyabara; Yamashiro may have Kansei. Designed H.P. 40,000=22.5 kts. Fuel: normal, 1000 tons maximum 4000 tons coal + 1000 tons oil fuel.

General Notes.—Fuso 1911 Naval Programme, Yamashiro 1913 Programme. Fuso built in dry dock and floated out March, 1914. First periods expired (F) 1923, (F) 1925. 3 planes added to equipment, 1927. Yamashiro is at present attached to Torpedo Training Establishment.

Name.	Builder.	Machinery.	Laid down.	Completed.	Trials. H.P. = kts.	Turbine	Boilers	Best recent speed
Fuso Yamashiro	Kure Yokosuka	Kawasaki Kawasaki	Mar.'12 Dec.'13	Nov.'15 Apr.'17	46,500= 23.	Curtis Curtis	Miyabara Miyabara	



Photo added 1926.



Photo added 1926.

Gunnery Notes.—Maximum elevation of 14 inch guns reported to be 25°.—(Unofficial.)

JAPAN—Battle Cruisers.

1911 BATTLE CRUISERS.

(KONGO CLASS—4 SHIPS.)

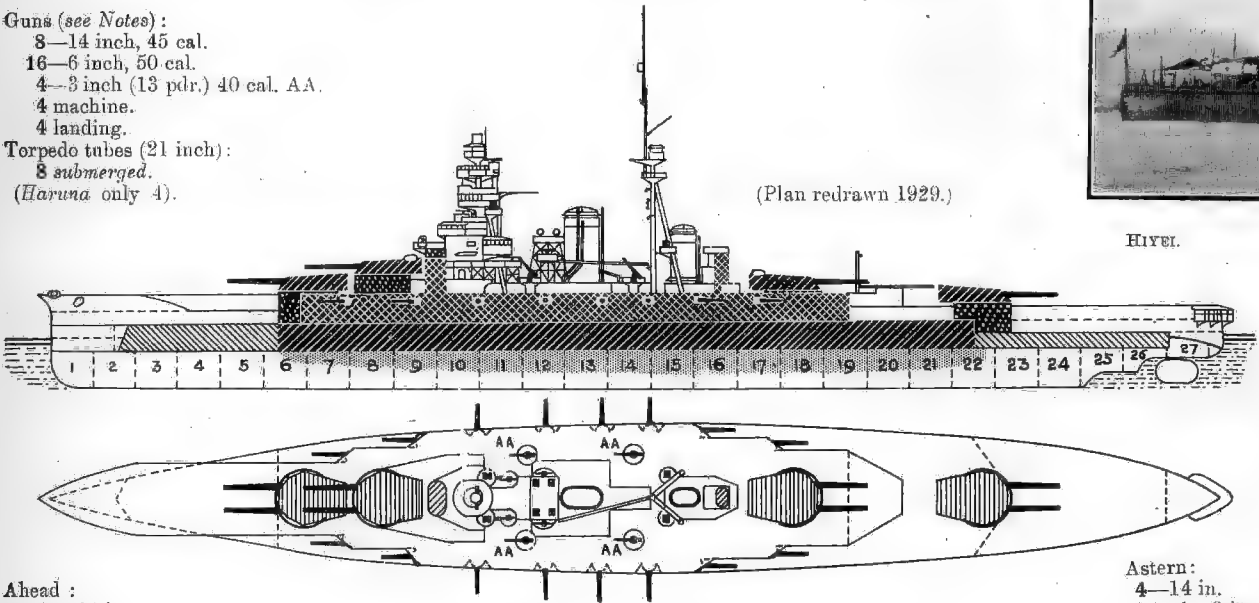
うかん KONGO (May, 1912), いにひ HIYEI (Nov., 1912),

なるは HARUNA (Dec., 1913), ましりき KIRISHIMA (Dec., 1913).

Normal displacement, *Kongo*, *Hiyei*, 27,500 tons; *Kirishima*, 27,613 tons; *Haruna*, 29,320 tons standard, 30,500 tons normal. Complement, 980.

Length (o.a.), 704 feet. *Kirishima*: Beam, 92½ feet. Maz. draught, 27 feet.
Kongo, Hiyei: " 92 " " " 27½ "
Haruna: " 95 " " " 27½ "

Guns (see Notes):
8—14 inch, 45 cal.
16—6 inch, 50 cal.
4—3 inch (13 pdr.) 40 cal. AA.
4 machine.
4 landing.
Torpedo tubes (21 inch):
8 submerged.
(*Haruna* only 4).



Ahead : 4—14 in.
2 to 4—6 in.
Broadside: 8—14 in., 8—6 in., 4—21 in. T.T.

Machinery: Parsons 4-shaft (in *Haruna* only Curtis 4-shaft) turbines. Designed H.P. 64,000 = 27.5 kts. (actually require about 80,000 H.P. for this speed—c.f. trials). Boilers: See Notes. Fuel: normal, 1,200 tons; maximum, 4,000 tons + 1,000 tons oil. *Haruna* now burns oil only.

Name	Builder	Machinery	Laid down	Completed	Trials F.P.		Turbine	Boilers	Re-fit	1st Period ended.
Kongo	Vickers	Vickers	Jan. '11	Aug. '13	44,800 = 25	78,000 = 27.3	Parsons	Yarrow	1925	1921
Hiyei	Yokosuka	Mitsu Bishi	Nov. '11	Mar. '14			Parsons	Kansel	1926	1922
Haruna	Kawasaki	Kawasaki	Mar. '12	Mar. '15		82,000 = 27.77	Curtis	Kampon	1926	1923
Kirishima	Mitsu Bishi	Mitsu Bishi	Mar. '12	Apr. '15		80,000 = 27.54	Parsons	Yarrow	1925	1923

General Notes.—*Kongo* 1910-11 Programme, others 1911-12 Programme. Designed by Sir George Thurston. For *Haruna* 30% of material was imported and erected in Japan. 3 planes added to equipment, 1927. *Haruna* refitted 1926-28, and bulges added, reducing speed by over a knot. *Kirishima* is now being altered similarly.
Appearance Notes.—All four ships now have raised fore-funnels (with clinker screens in *Hiyei* and *Kongo*) and additional tops on foremast. *Kongo* has her fore funnel set further forward and well away from the second funnel.



Hiyei.

1928 Photo.

Armour (Krupp):	
8" Belt (amidships)	•••••
3" Belt (ends)	•••••
6" Upper belt	•••••
6" Battery	•••••
9", 6", 5" Bulkheads (f)	•••••
8", 6" Bulkheads (aft)	•••••
10" " Barbettes	•••••
9" " Gunhouses	•••••
10" C.T. base	•••••
10" C.T. (" hood)	•••••
" Fore comm. tube ..	•••••
6" Torpedo con. tower ..	•••••
" Tube (C.T. tower) ..	•••••

Armour (H.T.?):	
Decks:	
" Forecastle	•••••
2 3/4" Main	•••••
" Middle	•••••
" Lower	•••••
Special Protection H.T.	
Torpedo Protection Bulkheads.	

These Notes are not from any official data.

Gunnery Notes.—In *Kongo* guns are Vickers models; but in other three ships all calibres are of Japanese manufacture. *Kongo* has combined Vickers (hydraulic) and Junney-Williams (electric) manœuvring systems for her barbettes; there is also a small auxiliary hydraulic installation, generally used for cleaning purposes, which can be used in emergency for working the 14-inch guns. Maximum elevation of 14-inch guns, 18°.

Armour Notes.—Main belt is 12" 5" deep, 8" thick, and extends between Barbettes Nos. 1 and 4. Upper belt between Barbettes Nos. 1 and 3, 6" thick, and carried up to fore-castle deck. Bulkheads: Main belt is closed by diagonal bulkheads of 8"—6" aft and by a 6"—5" bulkhead forward. Upper belt closed by 6" bulkhead aft and 9"—6" bulkhead forward. There is also a narrow 3 inch strip of armour, 2 feet 6 inch deep under whole length of main belt; this is not shown on plans.

Anti-Torpedo Protection Notes.—Internal sub-division by longitudinal and cross bulkheads. Extra protection given by armour to all magazine spaces. Port and starboard engine rooms are divided by an unpierced longitudinal bulkhead along keel-line. It is said contract for *Kongo* stipulated she should float with 50 feet of her side blown away, should not heel more than 11°, and automatically regain the vertical in a specified length of time, though at an increased draught.

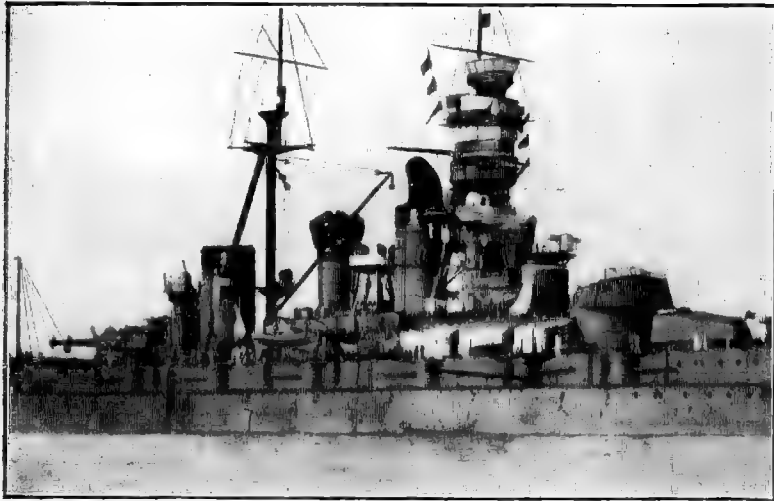
Torpedo Notes.—Tubes are twin submerged type, at varying levels, some being only 6 feet below waterline. Except in the case of the tubes in wake of No. 3 Barrette, starboard Tube is before Port Tube. *Kongo* has combined hydraulic and electrically-operated tubes. In *Haruna*, tubes are Armstrong 21-inch side-loading, hydraulically operated. *Haruna* has 16 searchlights, others 12.

Engineering Notes.—In *Kongo*, *Hiyei* and *Kirishima* Parsons turbines have H.P. rotors on outboard shafts and L.P. on inner shafts, with astern turbines aft and in same casing. *Kongo*'s 36 Yarrow boilers are in five compartments. Pressure: 205 lbs. per sq. inch. Boilers have auxiliary oil sprays. *Haruna* has 16 Kampon.

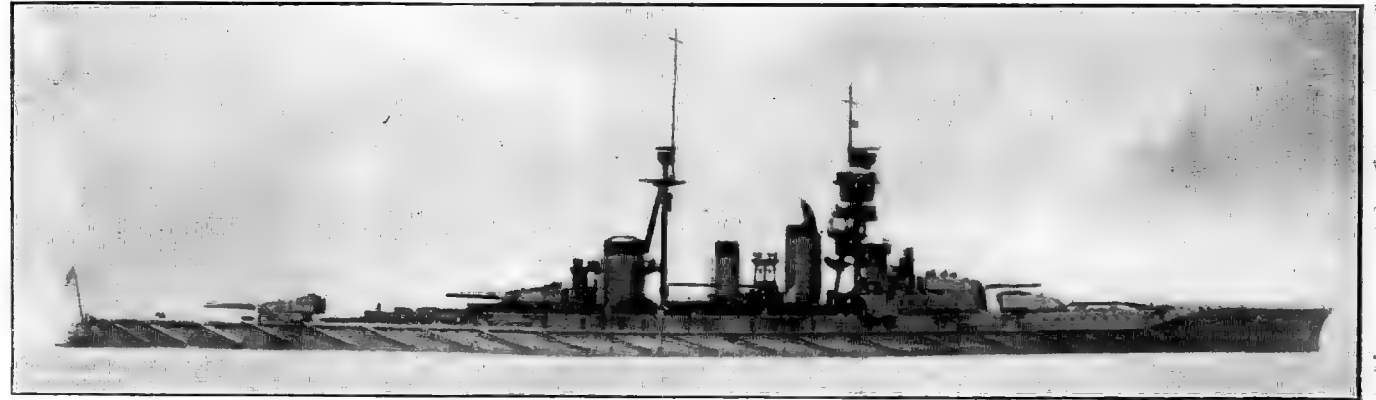
BATTLE CRUISERS.

Battle Cruisers—JAPAN

Illustrations for "Kongo" class Battle Cruisers



KONGO. Peculiar top to 2nd funnel is believed to be an anti-flare device. 1928 Photo

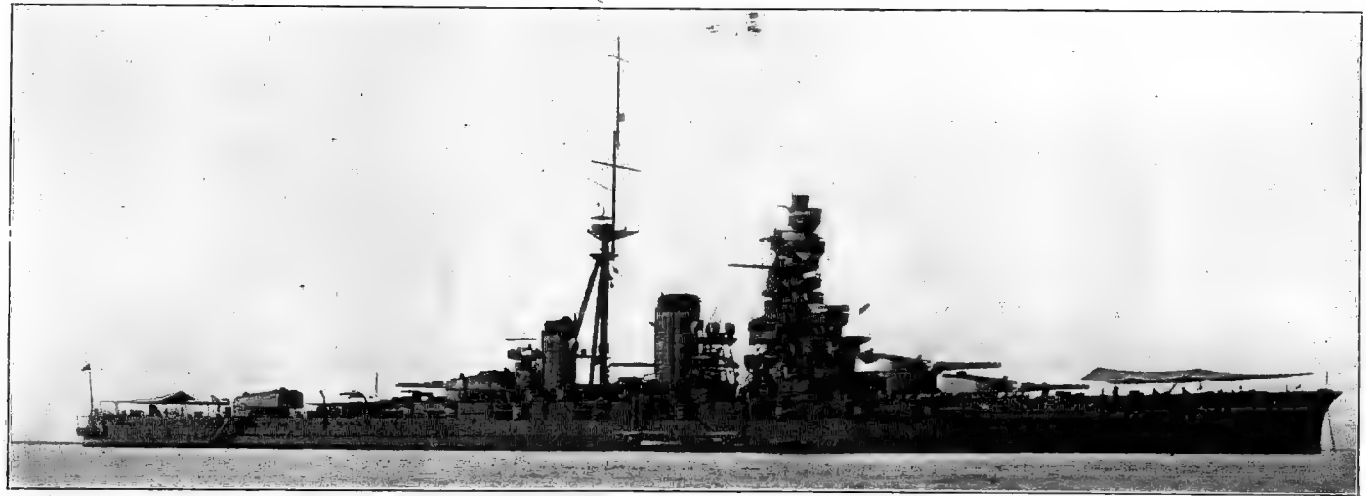


KONGO. (This ship has fore funnel set further forward than the other three of class.)

Photo added 1928.

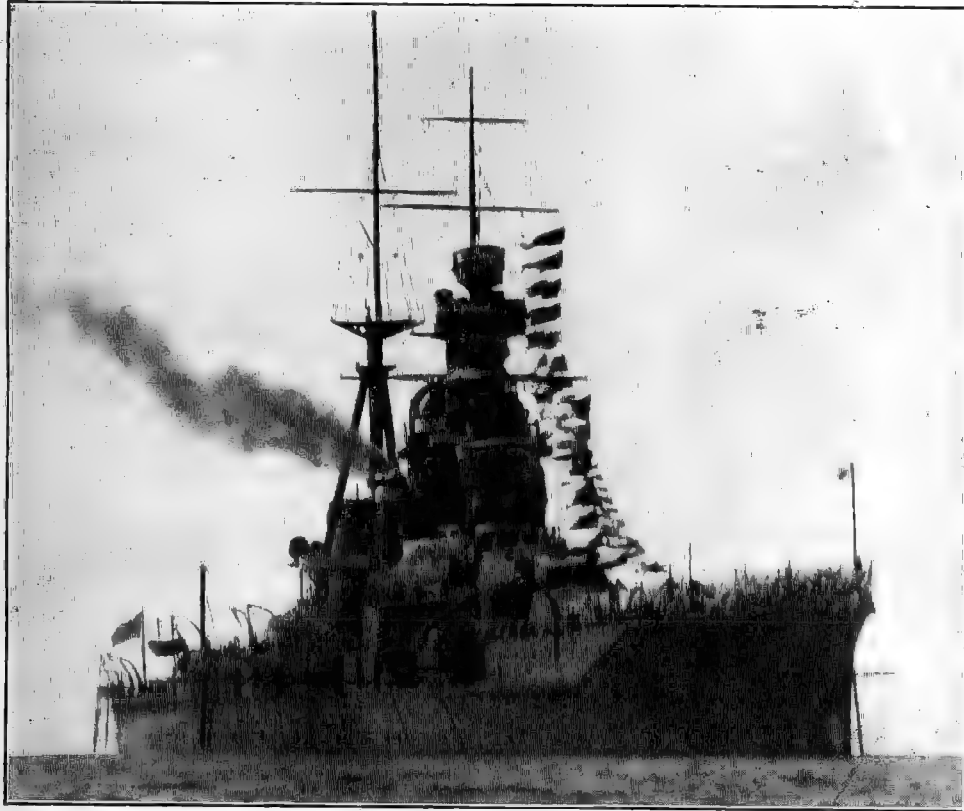


HARUNA. 1928 Photo



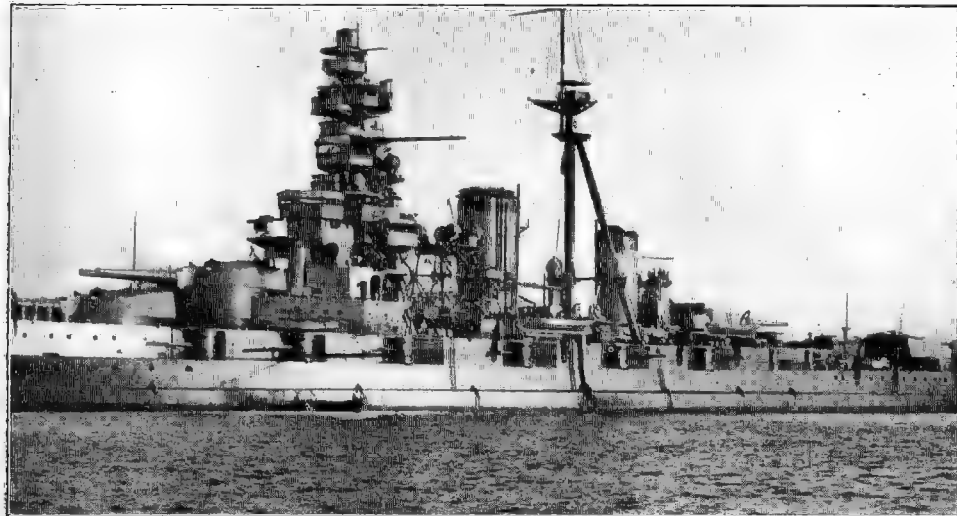
HARUNA.

1929 Photo.



HIYEL.

1928 Photo.



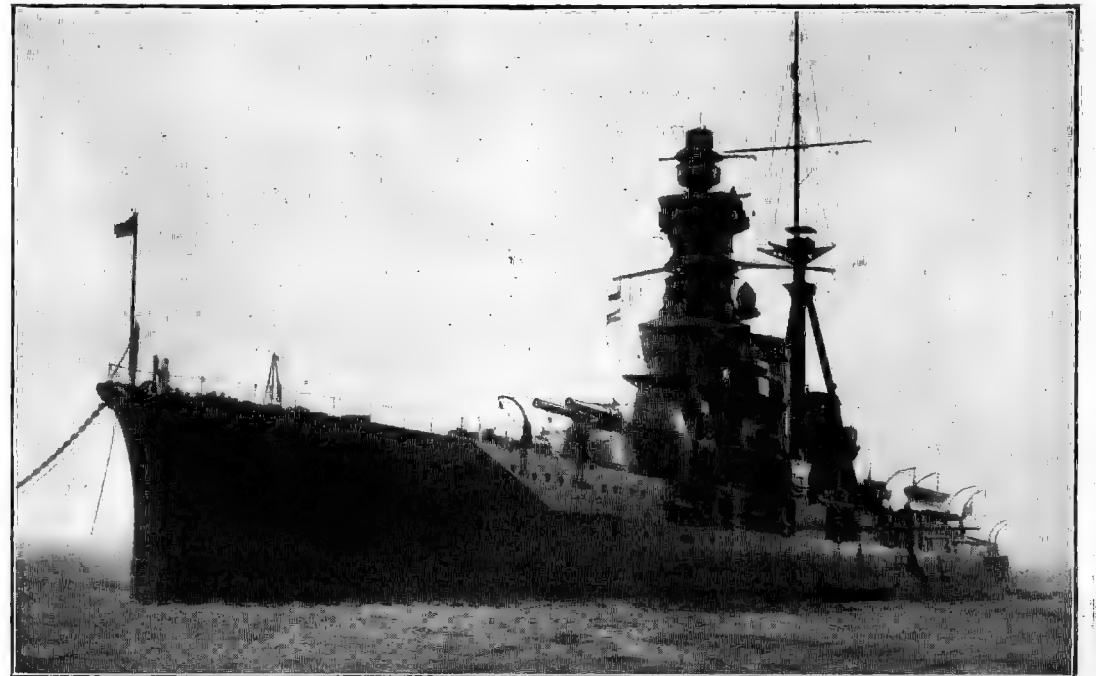
HARUNA.

1929 Photo.



HARUNA.

1928 Photo.



HARUNA.

1928 Photo.

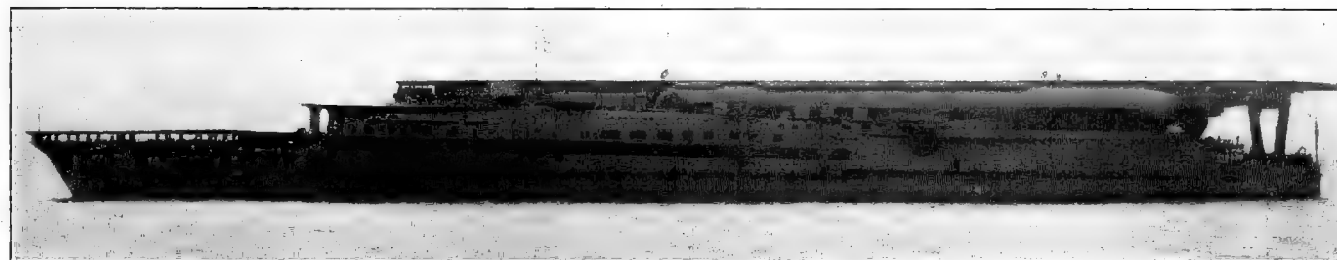
AIRCRAFT CARRIERS.

Aircraft Carriers—JAPAN

New Construction.

An Aircraft Carrier of 8,100 tons, to be named *RYUJO*, will be laid down by the Yokohama Dock Co. in January, 1930. Her design will be based on experience gained with *Hosho*, *Akagi* and *Kaga*.

かか KAGA (Kawasaki Co., Kobe, 17th Nov., 1921).
Displacement, 28,100 tons
Length (*p.p.*) 715 feet. Beam $102\frac{3}{4}$ feet. Draught $21\frac{1}{2}$ feet.



KAGA.

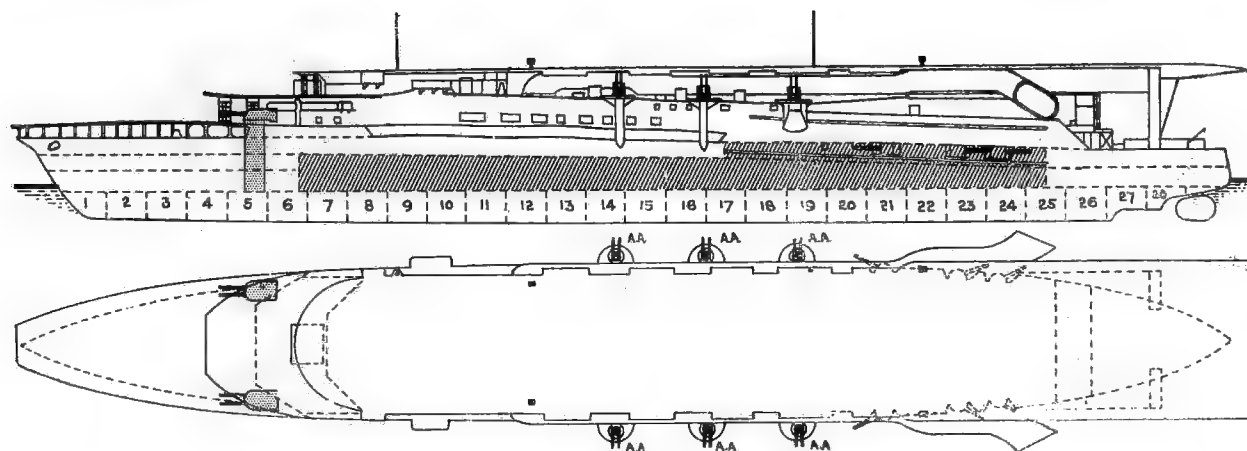
1929 Photo.

Guns :

10—8 inch.
4—4.7 inch.
12—4.7 inch AA.

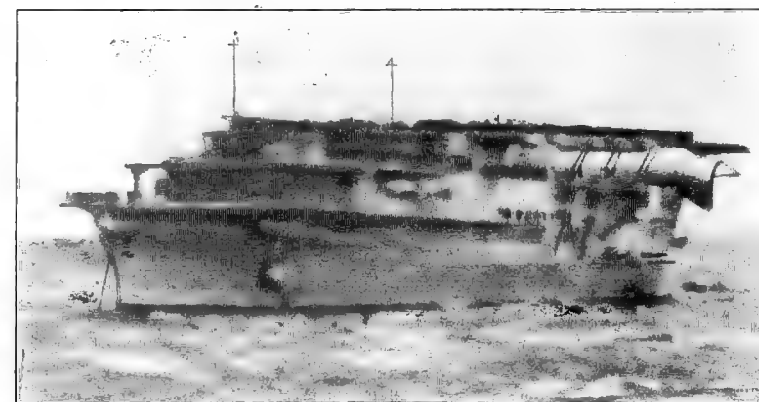
Armour :

" Belt.
" Gunhouses.



Machinery: Geared turbines. Designed S.H.P. 91,000 = 25 kts. (23 kts. was to have been speed originally). Fuel :

Notes:—Originally laid down July 20th, 1920, as a battleship of 39,900 tons, but has been converted into an aircraft carrier as the result of the Washington Treaty. Smoke is discharged through huge trunks on both sides, extending for nearly half the length of the ship and turning outboard towards the stern. There is accommodation for 60 planes.



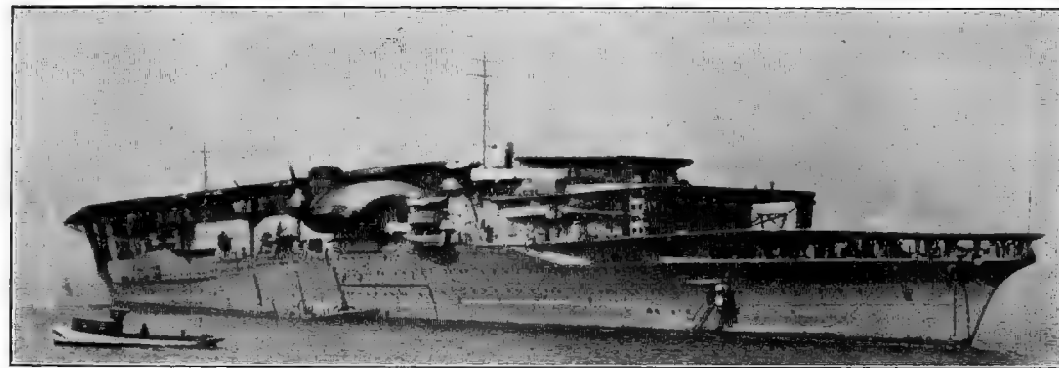
KAGA.

1929 Photo.



AKAGI.

1929 Photo.



AKAGI.

1929 Photo, Enseigne de Vaisseau Lafargue.

ぎかあ **AKAGI** (Kure Dockyard, April 22nd, 1925).

Displacement : 28,100 tons.

Length (*p.p.*), 763 feet. Beam, 92 feet. Draught, 21½ feet.



AKAGI.

1929 Photo.



AKAGI.

1928 Photo.

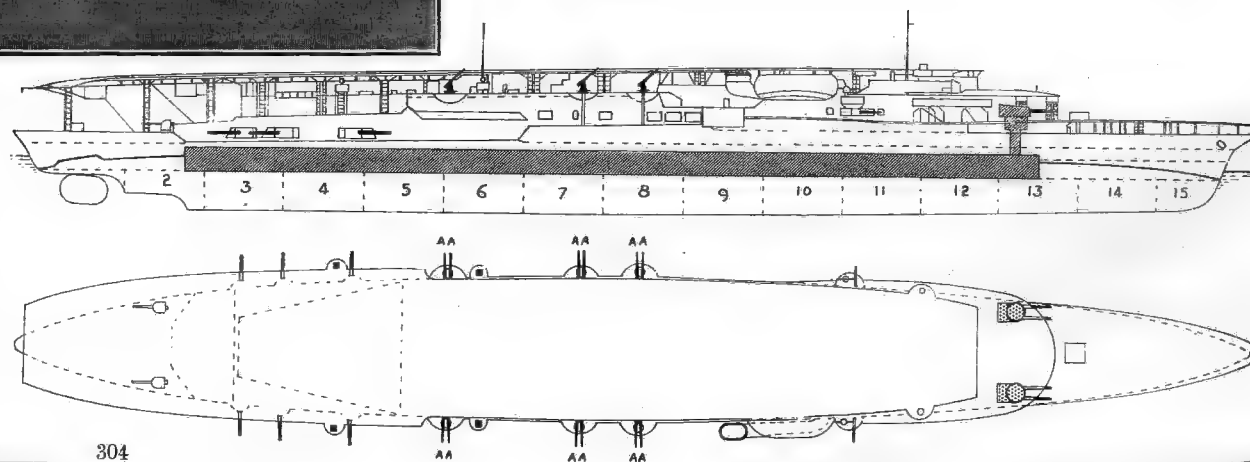
Machinery : Geared turbines. Original designed S.H.P. 131,200 = 28.5 kts. (likely to be exceeded). Fuel : Coal + oil in original design.

Notes.—Originally laid down on 6th Dec., 1920, as battle cruiser of 42,000 tons, but converted into aircraft carrier as result of Washington Treaty. Funnels are arranged on starboard side so that the foremost (which is internally divided into four) is trunked outward and downward amidships, while the second projects slightly above flight deck abaft of the first. Though she has accommodation for 50 planes, only about 30 are carried normally. There are 2 aircraft lifts on starboard side, one abaft funnels and a smaller one right astern.

Sister ship, *Amagi*, laid down at Yokosuka Dockyard, and launched late in 1922, was so badly damaged by earthquake and fire, September, 1923, that her construction was abandoned, and *Kaga's* hull was appropriated to replace her.

Guns :
10—8 inch
4—4.7 inch
12—4.7 inch AA.

Armour :
" Belt.
" Gunhouses.



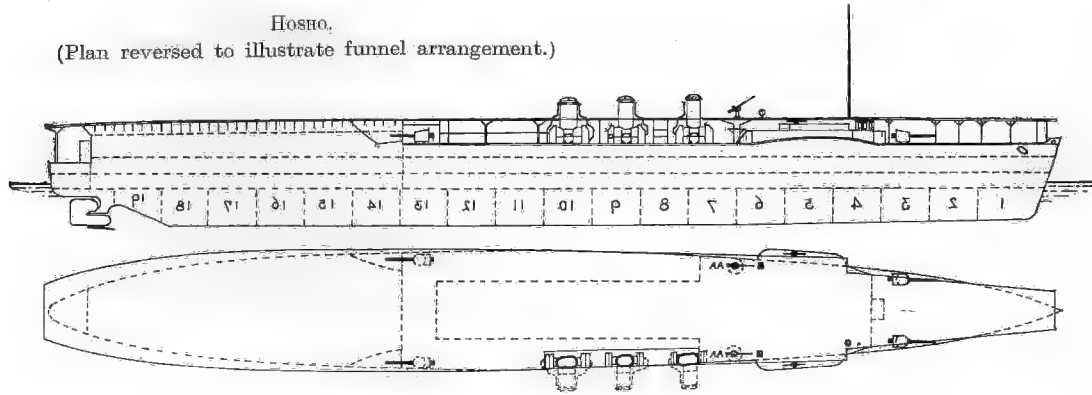
1929 Photo.



Hosho with funnels lowered to horizontal position.

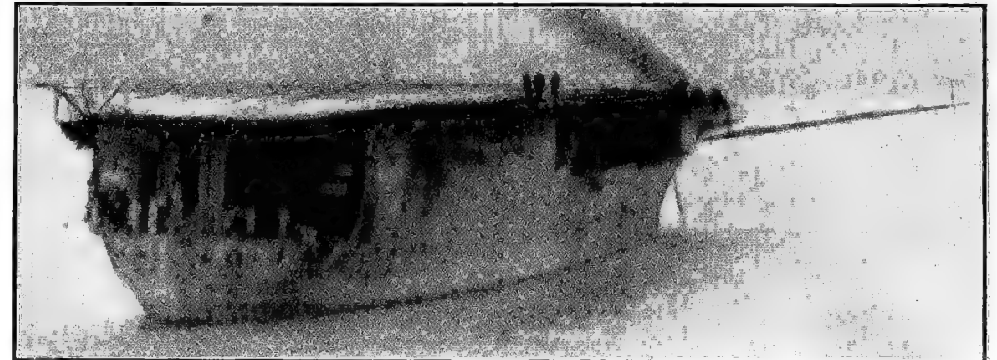
Photo added 1927.

Hosho.
(Plan reversed to illustrate funnel arrangement.)



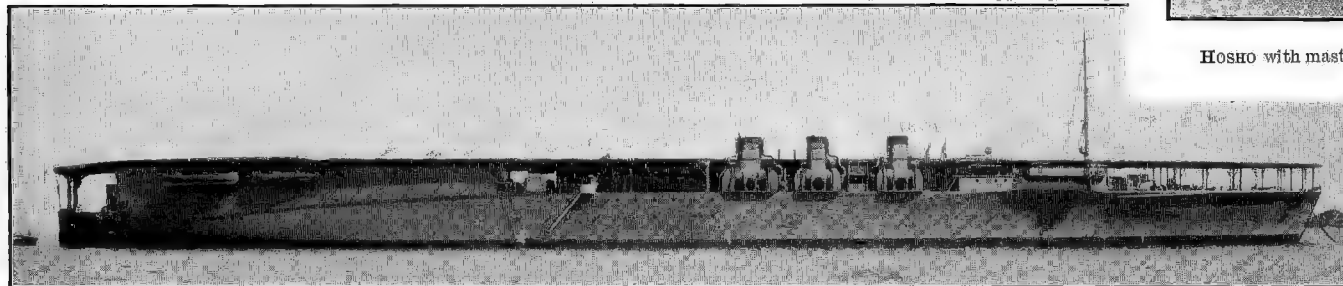
Hosho. Starboard side amidships.

1925 Photo, by courtesy of the Navy Dept., Tokyo.



Hosho with mast and funnels lowered.

Photo added 1927.



Hosho (as modified).

1925 Photo, by courtesy of the Navy Dept., Tokyo.

Note removal of former island superstructure and biped mast.

HOSHO (Asano Co., Tsurumi, 14th November, 1921). Displacement, 9,458 tons. (About 10,000 full load). Dimensions: 510 (p.p.) \times 62 \times 20 $\frac{1}{4}$ feet. Guns: 4—5·5 inch, 2—3 inch AA. 2 geared turbines. S.H.P. 30,000 = 25 kts. 8 Kampon boilers. Fuel: Oil only, 550 tons. Can carry 26 seaplanes with all accessories, etc. Sperry gyro-stabiliser fitted. 2 searchlights.

Note.—Laid down 16th December, 1920; completed December, 1922. First Period ends Dec. 1930. The building of a second ship of this type (to have been named *Shokaku*) was cancelled owing to Washington Treaty.

New Construction.

The building of 4 more 10,000 ton cruisers, to replace TENRYU, TATSUTA, KUMA and TAMA, has been authorised by the new Fleet Replenishment Programme. Whether they are laid down or not must necessarily depend on the decisions reached at the Naval Disarmament Conference in January, 1930.

(NACHI CLASS—8 SHIPS.)

NACHI (June 15th, 1927), **MYOKO** (April 16th, 1927), **ASHIGARA** (May 22nd, 1928), **HAGURO** (March 24th, 1928), **ATAGO**, **TAKAO**, **CHOKAI**, **MAYA**.

Standard displacement, 10,000 tons.
Complement, 692.

Length (p.p.), 630 feet. Beam, 57 feet.
Draught, 16½ feet.



MYOKO.

1929 Photo.

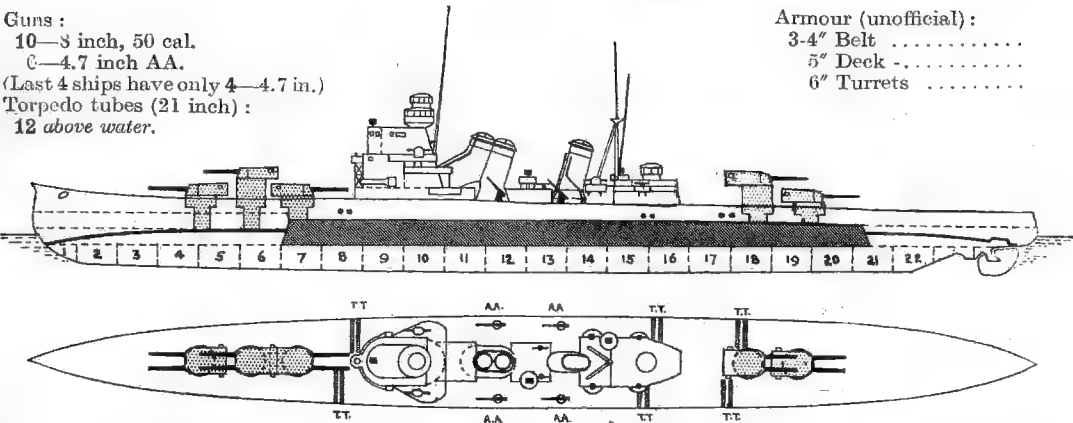


NACHI.

1929 Photo.

Guns :
10—8 inch, 50 cal.
6—4.7 inch AA.
(Last 4 ships have only 4—4.7 in.)
Torpedo tubes (21 inch) :
12 above water.

Armour (unofficial) :
3-4" Belt
5" Deck
6" Turrets



Machinery : Geared turbines. Boilers : Kampon. S.H.P. 130,000 = 33 kts. max. (32 kts. at deep load). Oil : 2,000 tons. Radius at 14-15 kts. : 14,000 miles.

Notes.—Provided for under 1923 and later Programmes. Triple hull, designed to give greatest possible protection against submarines. Vertical and deck protection over boiler and machinery spaces is 410 feet long. Guns are a new model with very high muzzle velocity. 4 planes carried. To cost £2,200,000 each. Two last ships of this class to be laid down in 1927. *Myoko* damaged through collapse of 2 large cranes, Dec. 23rd, 1925, and completion delayed.

Name	Builder	Machinery	Laid down	Completed	Trials
<i>Nachi</i>	Kure	Kure	26/11/24	Nov. 1928	
<i>Myoko</i>	Yokosuka	Yokosuka	25/10/24	31st July, 1929	
<i>Ashigara</i>	Kawasaki, Kobe	Kure	—/4/25	March, 1929	
<i>Haguro</i>	Mitsu Bishi	Yokosuka	—/3/25	April, 1929	
<i>Atago</i>	Kure	Kure	1926	To be 1930	
<i>Takao</i>	Yokosuka	Yokosuka	1926		
<i>Chokai</i>	Mitsu Bishi	Mitsu Bishi	(?) 5/28	To be 1931	
<i>Maya</i>	Kawasaki, Kobe	Kawasaki	26/3/28		

(KINUGASA CLASS—2 SHIPS.)

KINUGASA (Oct. 24th, 1926), **AOBA** (Sept. 24th, 1926).

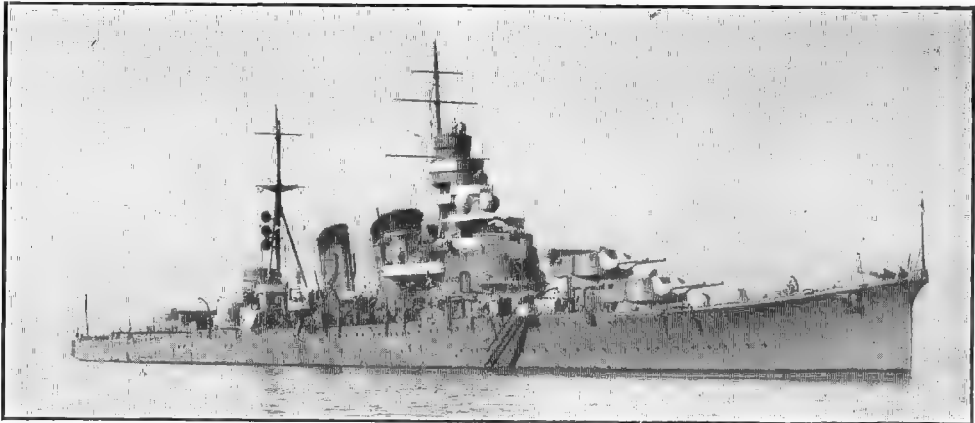
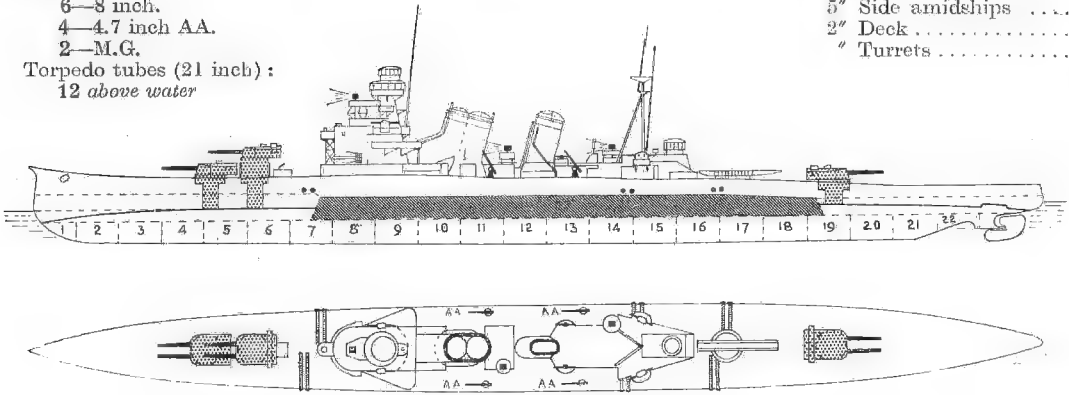
Standard Displacement, 7,100 tons. Complement, 604.

Length (*w.l.*), 580 feet. Beam, 50 $\frac{3}{4}$ feet. Draught, 14 $\frac{3}{4}$ feet.

Guns :
6—8 inch.
4—4.7 inch AA.
2—M.G.

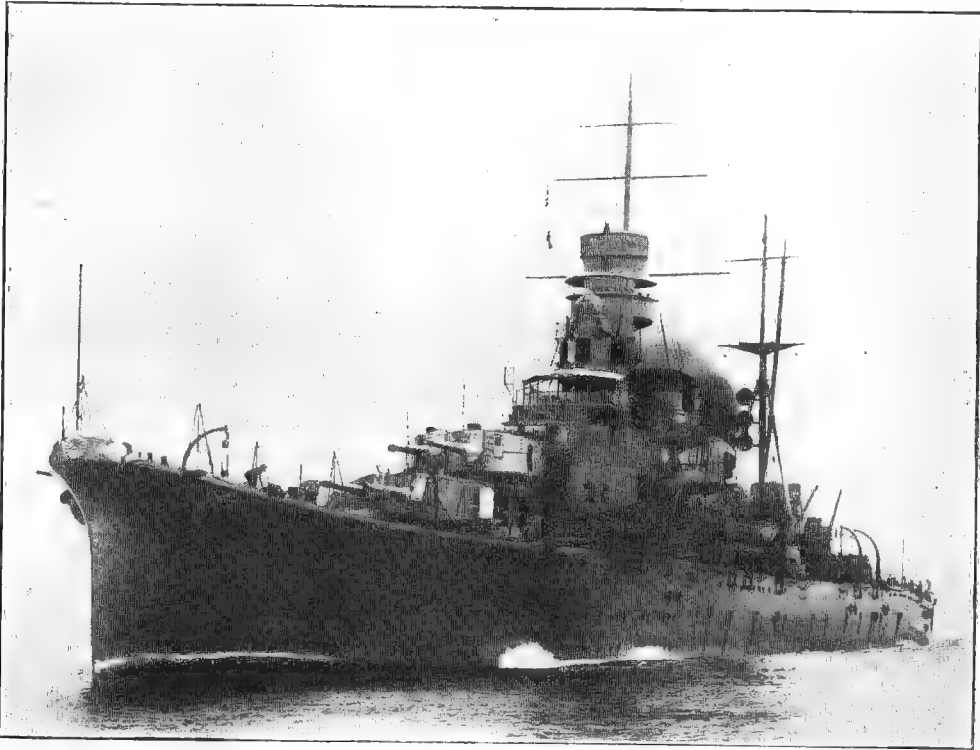
Torpedo tubes (21 inch) :
12 above water

Armour :
5" Side amidships . . .
2" Deck
" Turrets



AOBA

1927 Photo (added 1928).



KINUGASA.

1928 Photo, Navy Dept.

Machinery: Geared turbines. Boilers: Kampon. S H.P. 100,000 = 33 kts. Coal and oil: 1,600 tons. 2 planes carried.

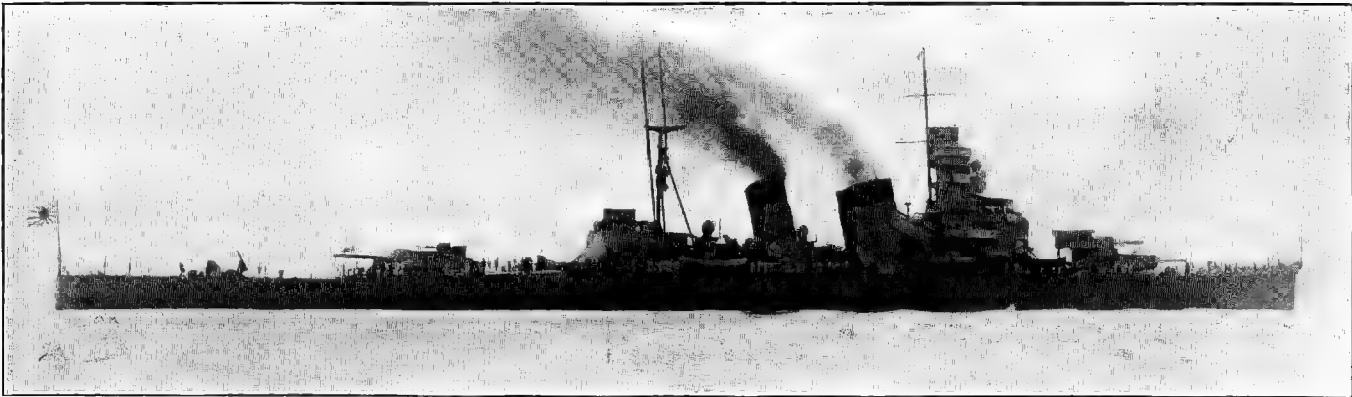
Name	Builder	Machinery	Laid down	Completed	Trials
Kinugasa Aoba	Kawasaki, Kobe Mitsu Bishi, Nagasaki	Kawasaki Mitsu Bishi	Jan., 1924 Feb., 1924	Sept., 1927 Dec., 1927	

Notes.—Provided for under 1923 Programme. 2 planes carried. Although of same general design as *Kako* class, they differ in arrangement of armament.

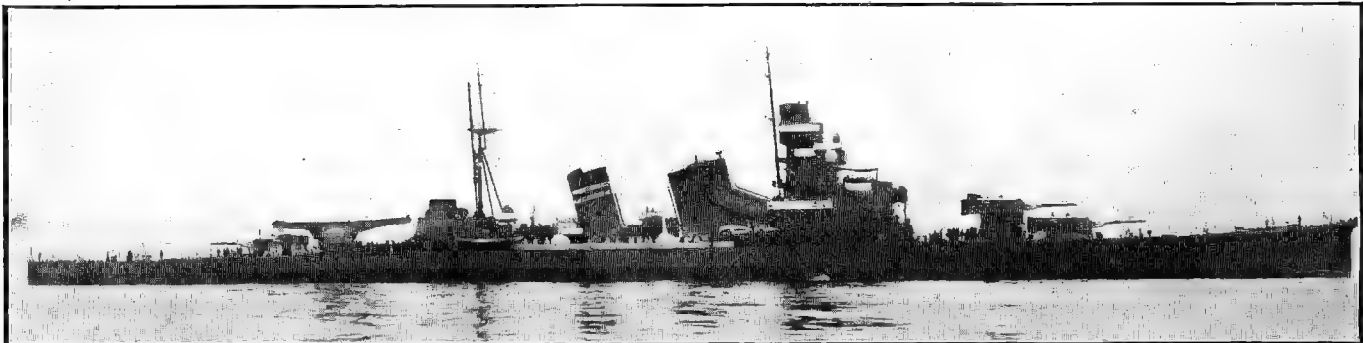
FIRST
CLASS
CRUISERS.



Aoba. Photo, Oct., 1927.



Aoba. 1928 Photo.



With catapault fitted. 1928 Photo.

1922 FIRST CLASS CRUISERS. (Junyokan.)

First Class Cruisers—JAPAN

(KAKO CLASS—2 SHIPS.)

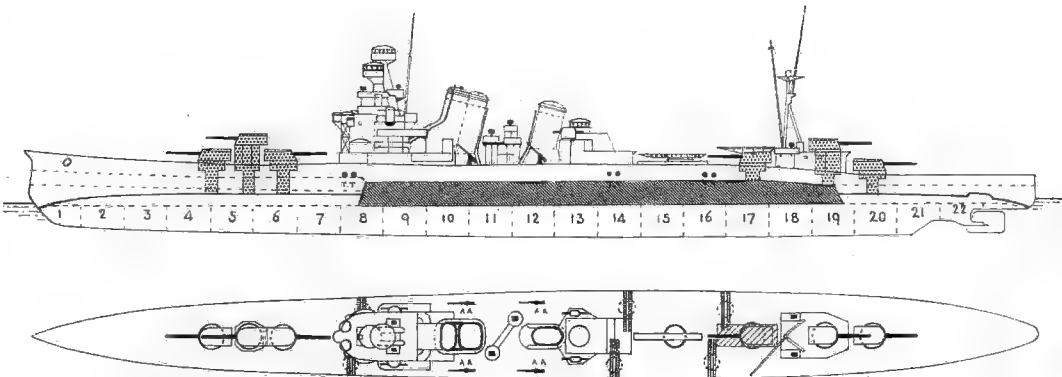
KAKO (10th April, 1925), **FURUTAKA** (26th Feb., 1925).

Standard displacement, 7100 tons. Complement, 604.

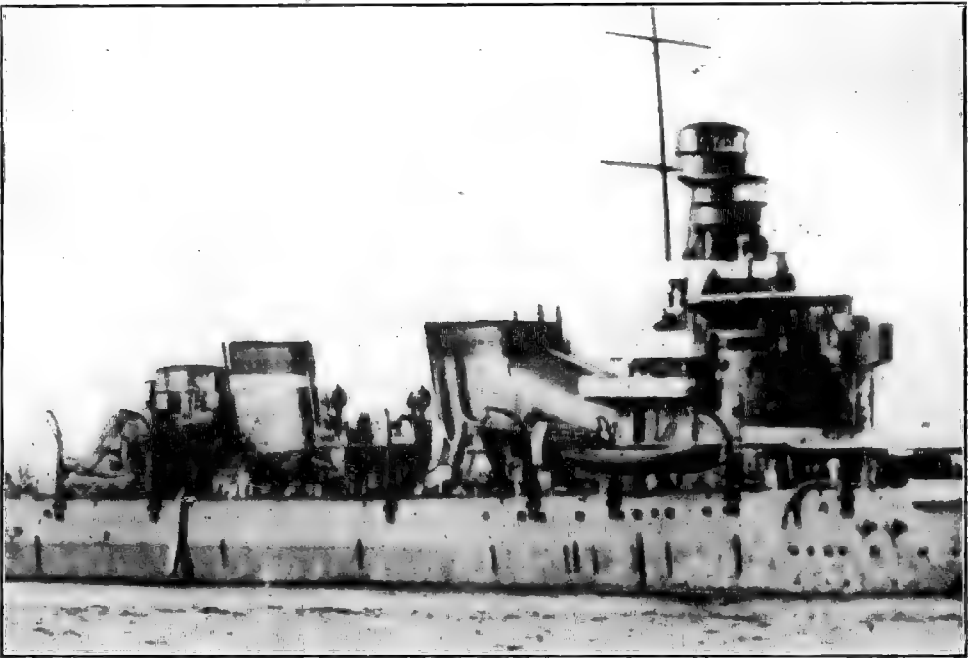
Length (w.l.), 580 feet. Beam, 50½ feet. Draught, 14½ feet.

Guns :
6—8 inch.
4—3 inch AA.
2 M.G.
Torpedo tubes (21 inch) :
12 above water.

Armour :
5" Side amidships.....
2" Deck
" Turrets



Machinery : Geared turbines. Boilers : Kampon. S.H.P. 100,000 = 33 kts. Fuel : 400 tons coal, 1200 tons oil.



KAKO as first completed.

Photo added 1927.



FURUTAKA, after refit. (Funnels raised and S.L. rearranged).

Name.	Builder.	Machinery.	Laid down	Completed	Trials
Kako Furutaka	Kawasaki, Kobe Mitsu Bishi, Nagasaki	Kawasaki Mitsu Bishi	Jan., 1923 Dec., 1922	1926.	

General Notes.—Provided for under 1922 Programme, 2 planes carried. Guns are 8 inch, not 7.5 inch, as previously advised. The arrangement of hangar, with catapult in close proximity, is particularly ingenious. The mast is a tripod, with the legs built in. It is reported that these vessels suffer somewhat from excessive "top hamper."

Torpedo Notes.—(Unofficial) Tubes can be transferred from one broadside to the other.

Appearance Notes.—These ships and Kinugasa class are now differentiated thus:—

KAKO.....1 white band on after funnel.
FURUTAKA...2 " " "
AOBA.....1 red " "
KINUGASA...2 " " "

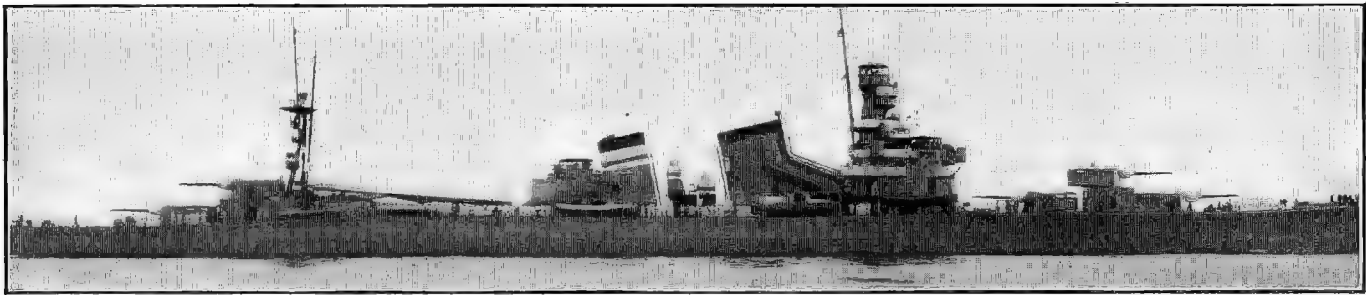
JAPAN—First Class Cruisers.

FIRST CLASS CRUISERS. (*Junyokan.*)



FURUTAKA.

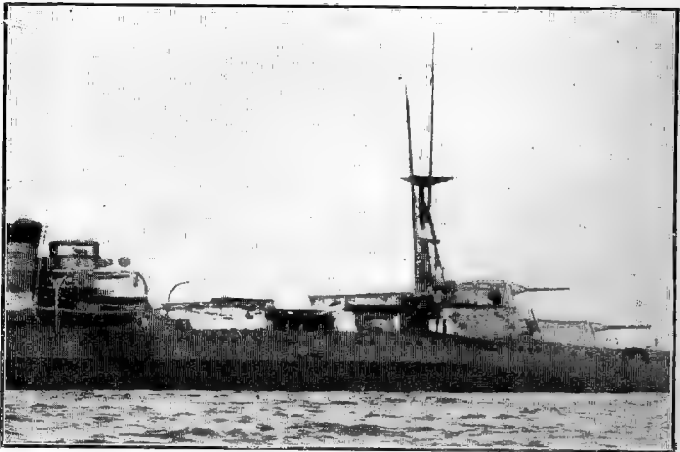
Photo added 1927.



FURUTAKA.

June, 1928 Photo.

(Additional views on following page.)



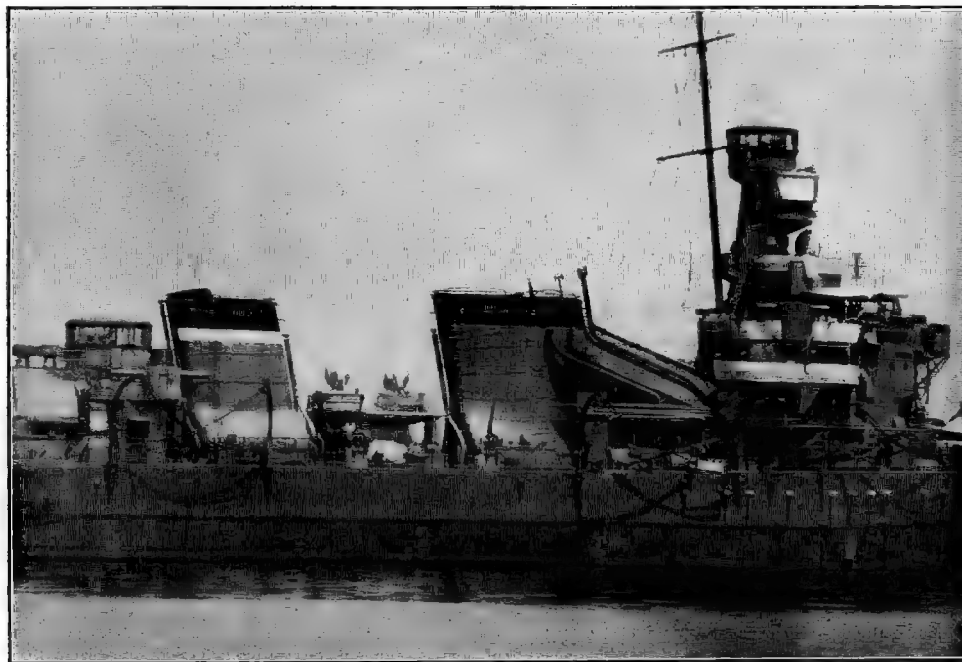
KAKO (showing catapults and after guns).

Photo added 1927.



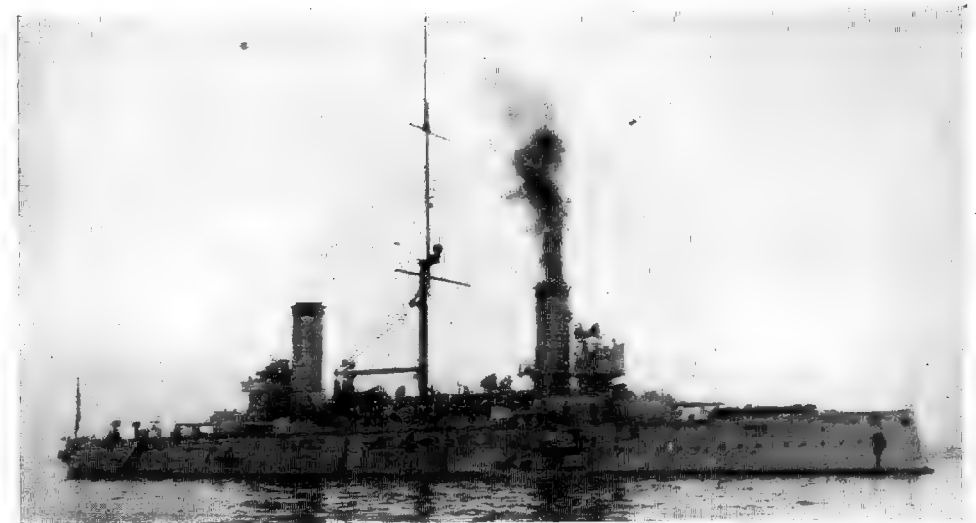
FURUTAKA

Photo added 1926.



KAKO. Detail view before alteration to funnels.

Photo added 1926.



NISSHIN. (KASUGA also has plain funnels now.)

1919 Photo, Seaward, Weymouth.

(Now rated as First Class Coast Defence Vessels.)

んしつに

NISSHIN (Feb., 1903) & **KASUGA** (Oct., 1902).
Displacement 7628 tons. Complement 610 and 595.

かすか

Length (waterline), 357 feet. Beam, 61 feet 11 ins. Maximum draught, 25½ feet.

Guns (Armstrong):

Nisshin—4—8 inch, 45 cal.

Kasuga { 1—10 inch, — cal.
2—8 inch, 45 cal.

and in both ships {

14—6 inch, 45 cal.
4—3 inch A.A.

2 Maxims.

Torpedo tubes (18 inch):

4 above water (in casemates)

Armour (Terni):

6" Belt (amidships)

4½" Belt (ends)

1½" Deck (on slopes)

5½" Turrets

5½" Turret bases (N.C.)...

6" Lower deck side

4½" Lower deck bulkheads

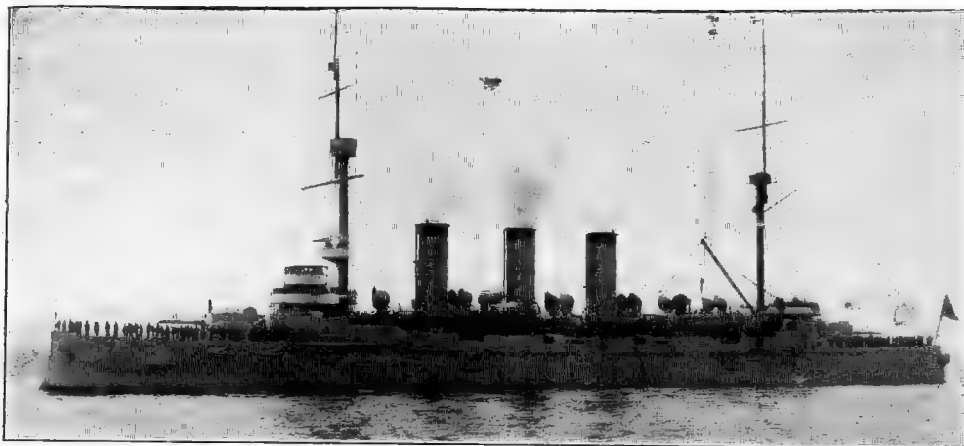
6" Battery (N.C.)

4½" Battery (bulkheads, ...

4½" Conning tower

Machinery: 2 sets 3 cylinder vertical triple expansion. 2 screws. Boilers: 12 Kampon. Designed H.P. 13,500=20 kts. Coal: *normal*, 650 tons; *maximum*, 1,200 tons. 4 searchlights.

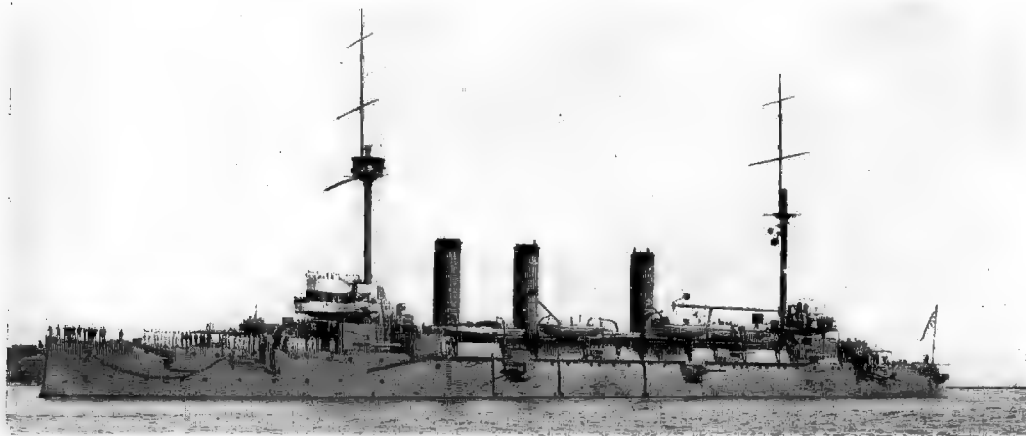
General Notes.—Laid down for Argentina by Ansaldo, Genoa, in 1902, as the *Moreno* and *Rivadavia*. Purchased end of 1903 by Japan for £760,000, just before outbreak of Russo-Japanese War. Both had large refits 1914. *Kasuga* stranded at N.W. entrance to Banka Straits, Dutch East Indies, during January, 1918, and was not refitted till May. She has undergone extensive repairs in a Japanese dockyard. Now in "Third Period," 1920—28.



YAKUMO.

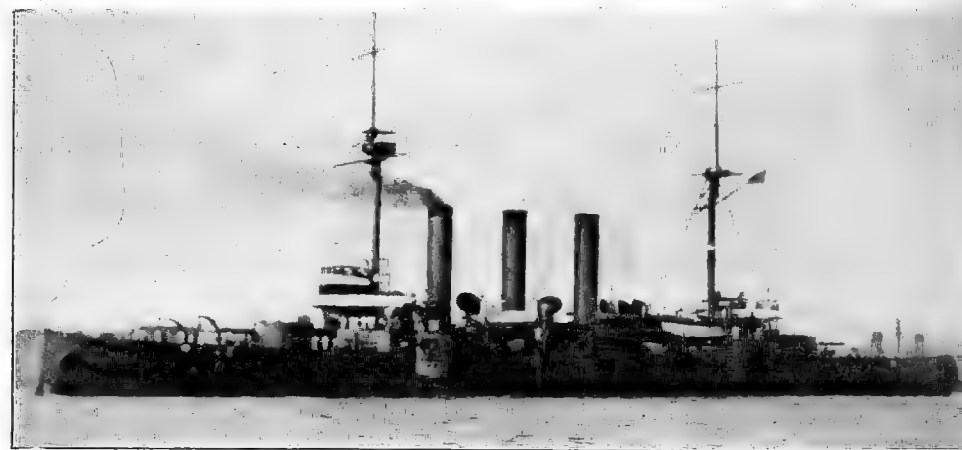
1929 Photo.

やぐも YAKUMO (Vulcan Co., 1899). Displacement, 9,735 tons. Complement, 698. Length (p.p.), 390 feet. Beam, 64½ feet. Mean draught, 23½ feet. Length over all, 434 feet. Guns: 4—8 inch, 40 cal., 12—6 inch, 40 cal., 4—2½ pdr., 4 S.L. Torpedo tubes (18 inch): 4 submerged. Armour (Krupp): 7" Belt (amidships), 3½" Belt (ends), 2½" Deck (slopes), 6" Turrets (N.C.), 6" Turret bases (N.C.), 5" Lower deck side, 6" Casemates (8), 10" Conning tower. (Total weight, 2040 tons.) Machinery: 2 sets vertical triple expansion. 2 screws. Boilers: 24 Belleville. Designed H.P. 15,500 = 20½ kts. Coal: normal 550 tons; max. 1200 tons. Third Period expired 1924. Employed as Midshipmen's Training Ship.



1920 Photo, M. Bar, Toulon.

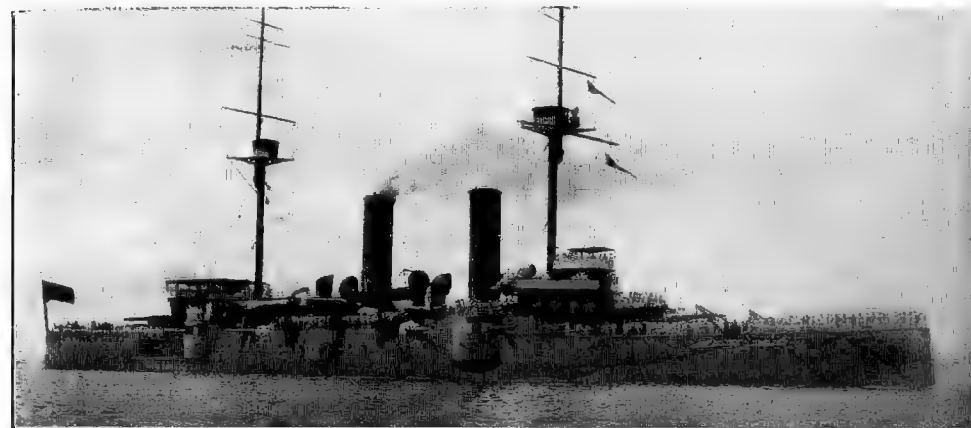
あづま ADZUMA (St. Nazaire, 1899). Displacement, 9426 tons. Complement, 644. Length (waterline), 430 feet. Beam, 59½ feet. Maximum draught, 25 feet. Length over all, 452½ feet. Guns (Armstrong): 4—8 inch, 40 cal., 12—6 inch, 40 cal., 4—2½ pdr., 4 S.L. Torpedo tubes: 4 submerged. Armour (Krupp mostly): 7" Belt (amidships), 3½" Belt (ends), 2½" Deck (on slopes), 6" Turrets and bases (H.N.), 6" Casemates (H.N.), 5" Side above belt. (Total weight, 2000 tons.) Machinery: 2 sets vertical triple expansion. 2 screws. Boilers: 24 Belleville. Designed H.P. 17,000 = 21 kts. Coal: normal 600 tons; maximum 1200 tons. Third Period expired 1924.



IWATE.

1929 Photo.

いづも IDZUMO (Armstrong, 1899) & **いわた IWATE** (Armstrong, 1900). Displacement, 9826 tons. Complement, 658. Length (p.p.), 400 feet. Beam, 68½ feet. Max. draught, 24½ feet. Length over all, 434 feet. Guns (Armstrong): 4—8 inch, 40 cal., 8—6 inch, 40 cal., 2—3 inch AA., 4—2½ pdr., 3 M.G., 4 S.L. Torpedo tubes: 4 submerged. Armour (Krupp): 7" Belt (amidship), 3½" Belt (ends), 2½" Deck (slopes), 5" Lower deck (redoubt), 6" Turrets and bases, 6" Casemates, 14" Conning tower. (Total 2100 tons.) Machinery by Humphry and Tennant: 2 sets 4 cylinder triple expansion. 2 screws. Boilers: Belleville. Designed H.P. 16,000 = 20.75 kts. Coal: normal 550 tons; maximum 1400 tons. Begun at Elswick 1898-99, and completed 1900-01. Third Periods expired 1924-25. *Iwate* employed as Cadets Training Ship, *Idzumo* as Midshipmen's Training Ship.



1924 Photo, I. Perman, Esq.

あさま ASAMA (March, 1898). Displacement, 9700 tons. Complement, 648. Length (o.a.), 442 feet. Beam, 67½ feet. Maximum draught, 24½ feet. Guns (Armstrong): 4—8 inch, 40 cal., 8—6 inch, 40 cal., 4—3 inch AA., 4—2½ pdr. Torpedo tubes (18 inch): 4 (submerged). Armour (Harvey-nickel): 7" Belt (amidships), 3½" Belt (ends), 2" Deck (slopes), 5" Upper belt (amidships), 3½" Bulkheads to it, 6" Turrets and bases, 6" Casemates (10), 14" Conning tower (Total, 2100 tons). Machinery: 2 sets 4-cylinder triple expansion. 2 screws. Boilers: 16 Miyabara. Designed H.P. forced 18,000 = 21½ kts. Coal: normal 550 tons, maximum 1400 tons. 3 S.L. Built by Armstrong. Very "handy" ship. *Asama* was badly damaged by grounding on Pacific Coast of Central America, in December of 1914. Was salvaged, repaired and refitted. Third Period expired 1923. Employed as Cadets Training Ship.

(JINTSU CLASS—3 SHIPS.)

うづんじ かな

JINTSU (8th Dec., 1923), NAKA (24th March, 1925),

いたんせ

SENDAI (30th Oct., 1923).

Normal displacement, 5765 tons. Complement, 450.

Length (*p.p.*), 500 feet; (*o.a.*) 535 feet. Beam, 46½ feet.
Draught, 15 feet 10½ ins.

Guns :

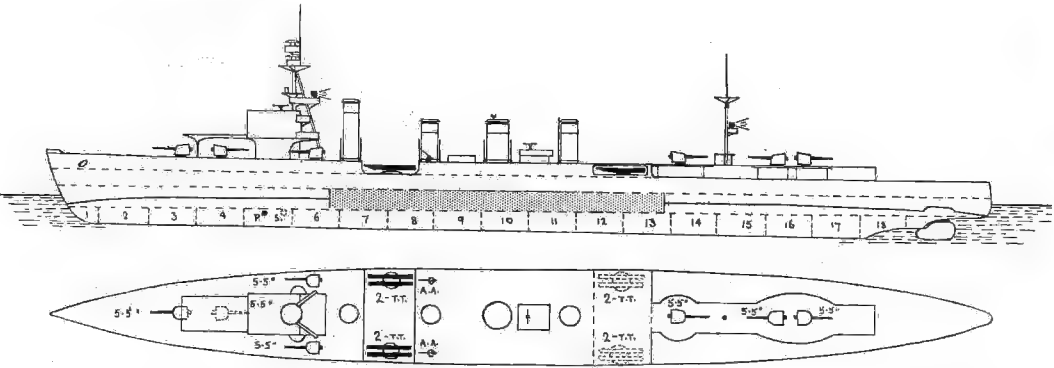
7—5.5 inch, 50 cal.
3—3 inch, 13 pdr., 40 cal.
AA.
2 M.G.

Torpedo tubes :

8—21 inch, above water.

Armour :

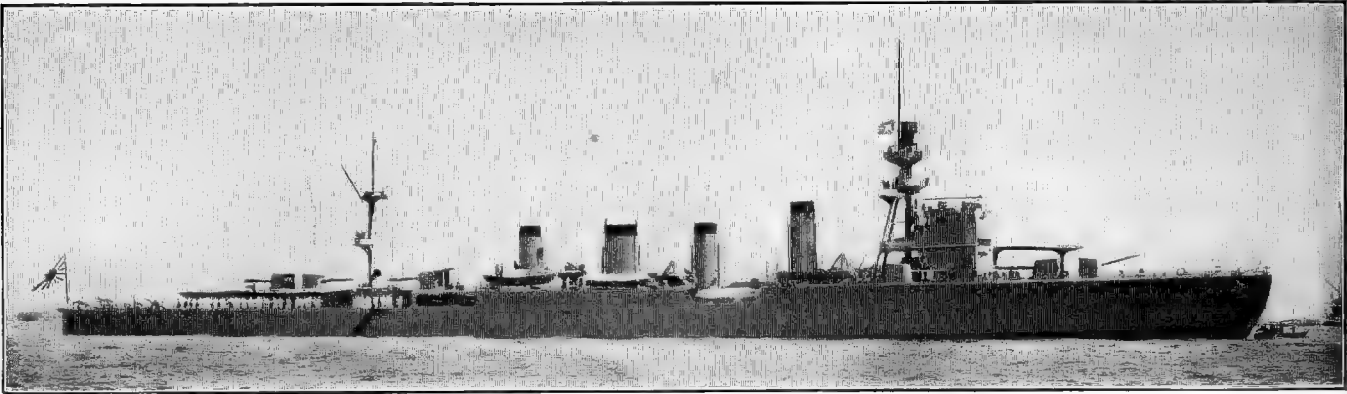
2" Side (amidships)
2" C.T.
Planes carried :
One.



Machinery : 4 geared turbines. 4 screws. Boilers : 16 Kampon. Designed S.H.P. 90,000
= 33 kts. Fuel : 350 tons *normal*, 1500 tons *max.*

Name.	Builder.	Machinery	Began.	Completed.	Trials	1st Period
Jintsu	Kawasaki, Kobe	Kawasaki	4 Aug., '22	31 July, '25		1925-33
Sendai	Mitsu Bishi, Nagasaki	Mitsu Bishi	16 Feb., '22	29 Apr., '24		1924-32
Naka	Yokohama Dock Co.	Mitsu Bishi	24 May, '24	30 Nov., '25		1926-34

General Notes.—Slightly enlarged and improved editions of *Natori* class on following page. Laying down of *Naka* was delayed by earthquake of Sept., 1923.



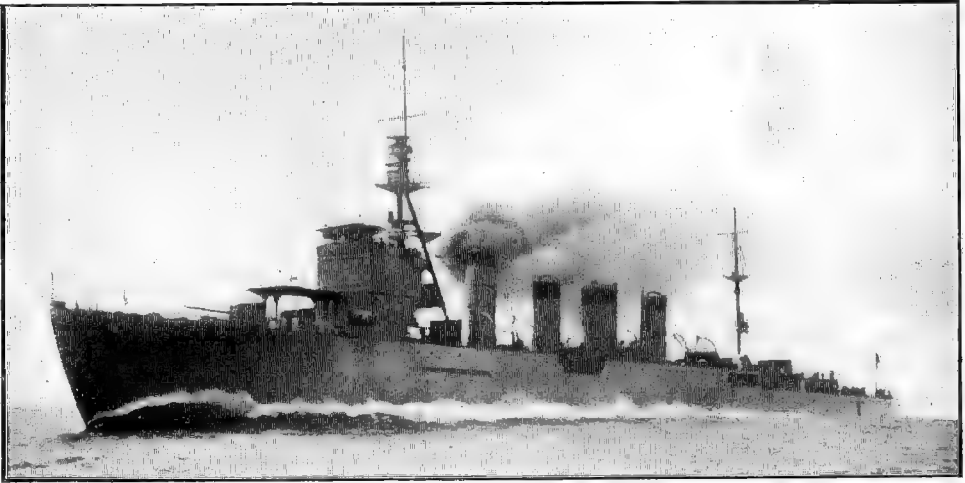
SENDAI (*Jintsu* was similar, but after collision bow has been rebuilt as *Naka*).

Photo added 1926.



NAKA (Note bow).

Photo added 1927.



SENDAI.

1925 Photo, by courtesy of the Navy Dept., Tokyo.

"NATORI" CLASS (6 SHIPS).

づすい らがな

ISUDZU (29th Oct., 1921). NAGARA (25th April, 1921).

りとな らゆ

NATORI (16th Feb., 1922). YURA (15th Feb., 1922).

ぬき まくふあ

KINU (29th May, 1922). ABUKUMA (16th March, 1923).

Normal displacement, 5570 tons. Comp., 438.

Length (p.p.), 500 feet, (o.a.) 535 feet. Beam, 46½ feet.

Draught, 15 feet 10½ ins.

Guns:—

7—5.5 inch, 50 cal.

3—3 inch, 13 pdr. 40 cal.

AA.

2 M.G.

Torpedo tubes: (21 inch)

8 (above water).

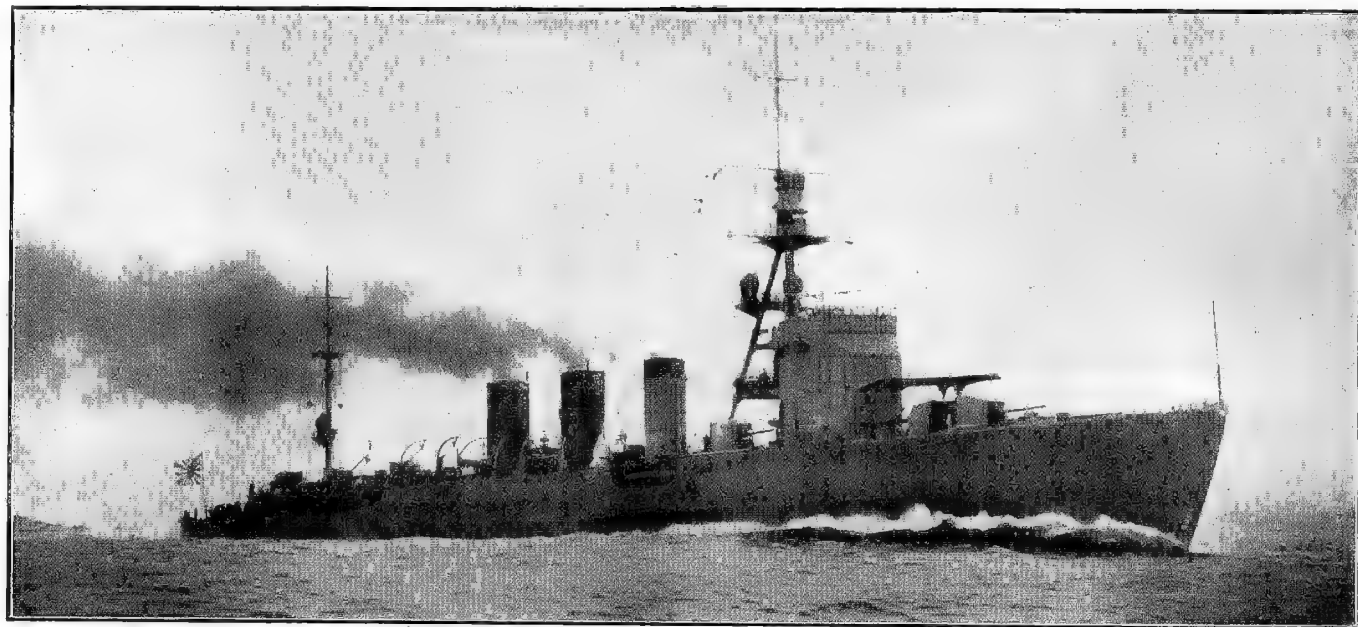
Armour:

2" Side (amidships).

2" C.T.

Planes carried:

One.



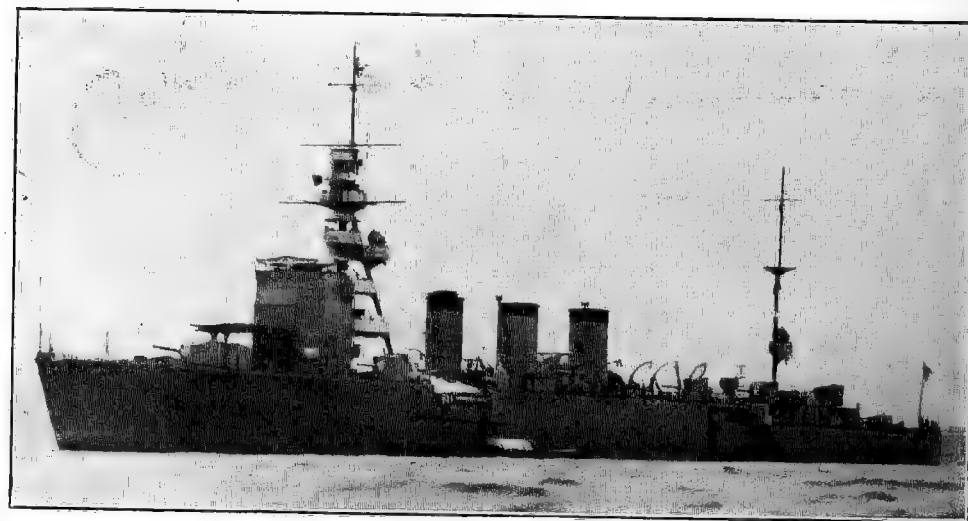
KINU.

Photo added 1927.

Plan: Details generally as *Kuma*, but with aircraft hangar added forward.

Catapult is now being installed on platform over after guns.

Machinery: 4 geared turbines. 4 screws. Boilers: 12 Kampon,
8 oil and 4 coal burning. Designed S.H.P. 90,000 = 33 kts.
Fuel: 350 tons *normal*, 1500 tons *max*.



NATORI

1928 Photo.

Name	Builder	Machinery	Begun	Com- pleted	Trials (unofficial)	First Period
Isudzu	Uraga Dock Co.	Mitsu Bishi	10 Aug., '20	Aug., '23		1923-31
Nagara	Sasebo D.Y.	Kawasaki	9 Sept., '20	April, '22		1922-30
Natori	Mitsu Bishi Nagasaki	Mitsu Bishi	14 Dec., '20	Sept., '22	65,000 = 33.4	1922-30
Kinu	Kawasaki Co., Kobe	Kawasaki	17 Jan., '21	Nov., '22		1922-30
Yura	Sasebo D.Y.	Kawasaki	21 May, '21	March, '23		1922-30
Abukuma	Uraga Dock Co.	Mitsu Bishi	8 Dec., '21	Sept., '23		1923-31

General Notes.—Commencement authorized by 1919 Navy Programme. Cost of each ship is said to be £1,750,000. Reported that considerable trouble was experienced with *Kinu* on additional trials run in August, 1924, after various adjustments had been made to engines in an endeavour to bring speed up to designed figure. Best recent speed said to be 30 kts.

1918-19 SECOND CLASS CRUISERS.

Second Class Cruisers—JAPAN

KUMA CLASS—5 SHIPS.

まぐ **KUMA** (July 14th, 1919), また **TAMA** (Feb. 10th, 1920),

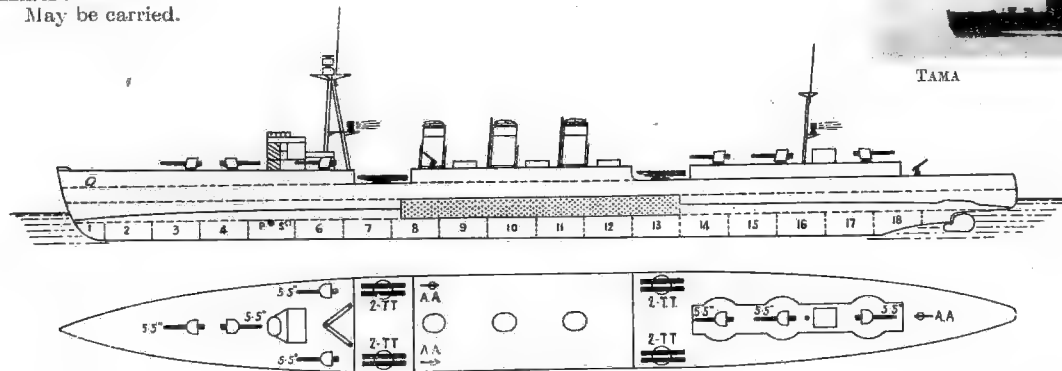
るほね **OHI** (July 15th, 1920),

みかたき **KITAKAMI** (July 3rd, 1920), そき **KISO** (Dec. 14th, 1920).

Normal displacement, 5500 tons. Complement, 439
Length (p.p.), 500 feet (o.a.), 535 feet. Beam, 46½ feet. Mean draught, 15½ feet.

Guns :
7—5.5 inch, 50 cal.
3—3 inch (13 pdr.), 40 cal.
— M.G.
Torpedo tubes (21 inch) :
8 above water.
Searchlights :
3—30 inch.
Mines :
May be carried.

Armour (unofficial) :
2" (H.T.) Side (amidships).....
2" C.T.



Ahead : 3—5.5 inch. Broadside : 6—5.5 inch, 4—21 inch T.T. Astern : 1—5.5 inch.

Machinery : Geared Parsons or Curtiss Turbines. 4 screws. Boilers : 12 Kampon, 10 oil fuel, 2 mixed firing. Designed H.P. 90,000 = 33 kts. Fuel : normal, 350 tons ; maximum, about 1500 tons = 8500 miles at 10 kts.

Name.	Builder.	Machinery	Laid down.	Completed.	Second Period.	First Trials.	Boilers	
<i>Ohi</i>	Kawasaki	Kawasaki	24/11/19	Sep., '21	1929-37	-34	All 12 Kampon.	
<i>Kitakami</i>	Sasebo D.Y.	Kawasaki	Sep., '19	Apr., '21				
<i>Kiso</i>	Mitsubishi Nagasaki	Mitsubishi	10/6/19	May, '21				
<i>Kuma</i>	Sasebo D.Y.	Kawasaki	Aug. '18	Aug. '20	1928-36			
<i>Tama</i>	Mitsubishi Nagasaki	Mitsubishi	Aug. '18	Jan., '21	1929-37			

General Notes.—No official data published concerning trials, but are reported to have averaged about 64,500 and about 33 kts. Cost about £1,000,000 each. An aeroplane was added to the equipment of these ships in 1927.



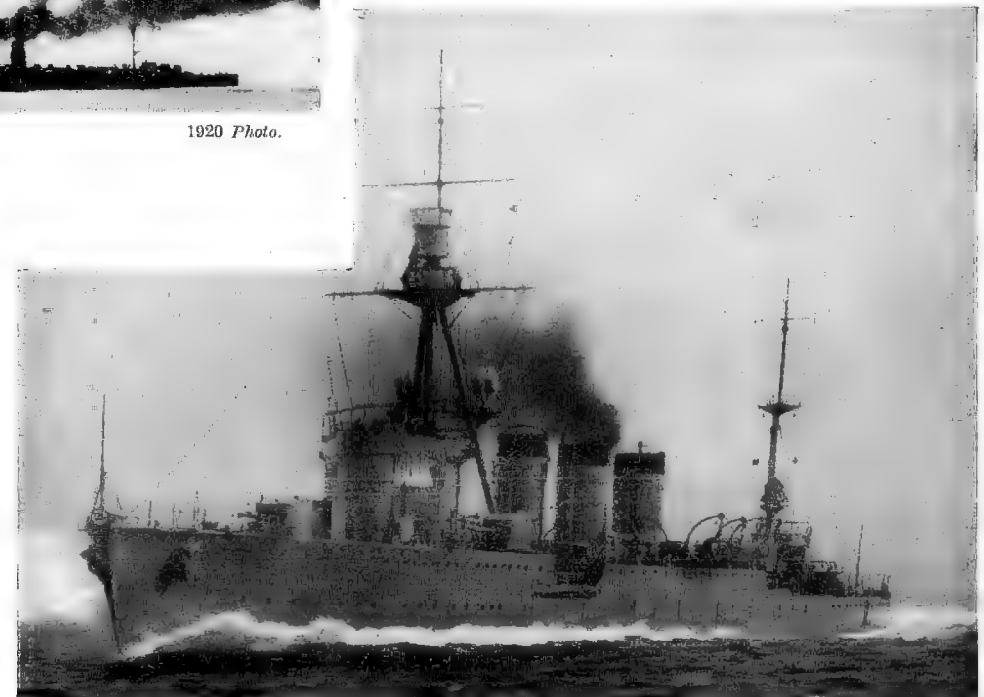
OHI.

1921 Photo, Navy Department, Tokyo.



TAMA

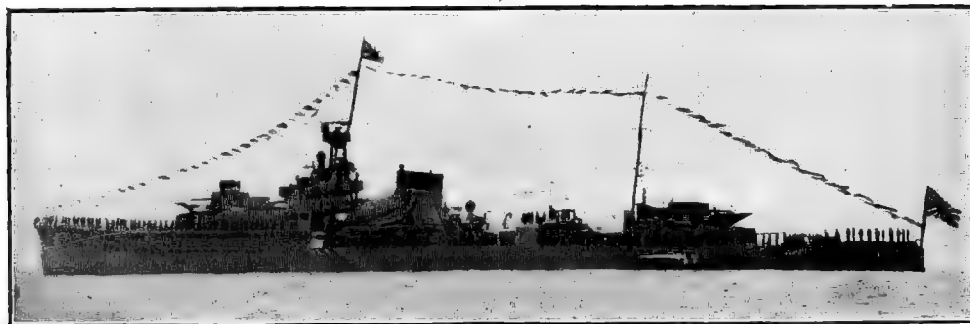
1920 Photo.



KISO.

1923 Photo, Navy Department, Tokyo.

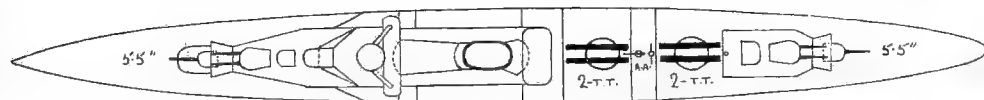
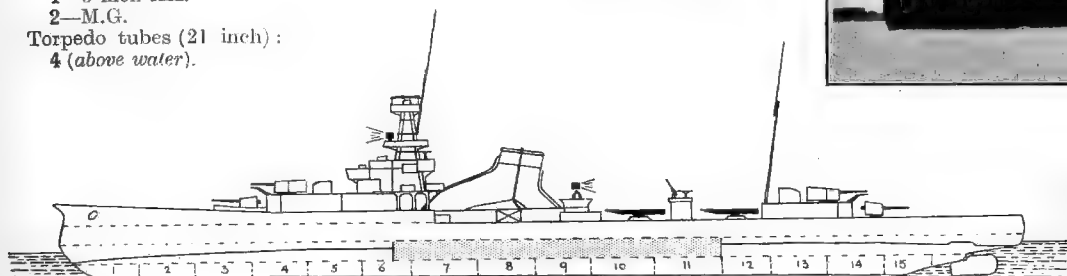
General Notes.—*Kuma* and *Tama* begun under the 1917 Naval Programme ; *Ohi*, *Kitakami*, *Kiso* under 1918 Programme. Completion of *Ohi* delayed by failure of one of her engines when she was running trials at end of Dec., 1920. Said to be very efficiently sub-divided and the general scheme of protection has been developed since the war. Fuel supply is somewhat above the average = 6,000 miles at 15 kts., and between 1,000 and 1100 miles at full speed.



1928 Photo.

YUBARI (5th March, 1923).

Normal displacement, 3,100 tons. Complement, 328.
 Length (p.p.), 435 feet. Beam, 39½ feet. Draught, 11 feet 9 ins.
 Guns:—
 6—5.5 inch, 50 cal. Armour (unofficial):
 1—3 inch A.A. 2" side (H.T.)
 2—M.G.
 Torpedo tubes (21 inch):
 4 (above water).



Machinery: Turbine. 3 screws. Boilers: 8 Kampon (coal and oil-burning). Designed S.H.P. 50,000 = 33 kts. Fuel: tons. 2 searchlights.

Note.—Laid down 5th of June, 1922, at Sasebo Dockyard. Completed 1924. First Period, 1924-32.

Torpedo Notes.—Tubes are arranged so that they can be moved to either broadside.

Engineering Notes.—Machinery was built by Sasebo Dockyard.



Photo added 1926.



YUBARI.

1927 Photo added 1928.

Special Note.

This remarkable vessel represents an attempt on the part of Japanese naval constructors to combine, on a displacement of 3,100 tons, speed and offensive power little inferior to those of "Kuma" and "Natori" types. She is employed on Flotilla Leader duties at present. In appearance, she is quite unlike any other Cruiser in existence.

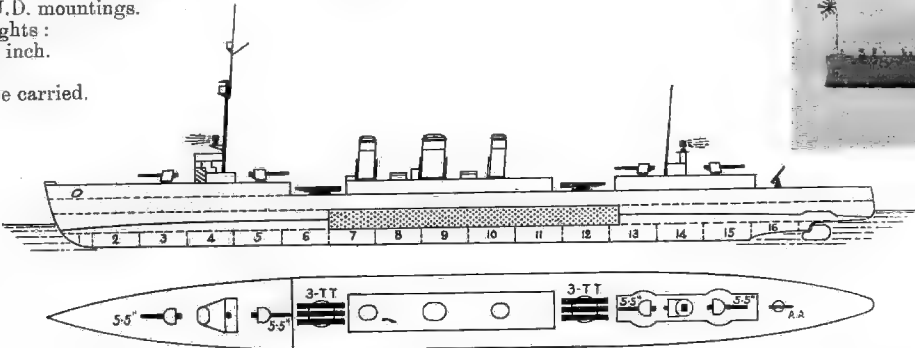
(TENRYU CLASS—2 SHIPS.)

たつた **TATSUTA** (29th May, 1918) & りんて **TENRYU** (11th Mar., 1918).

Normal displacement, 3500 tons. Complement, 332.

Length (o.a.): 468 feet (p.p.), 440 feet. Beam: 40½ feet. Mean draught: 13 feet.

- Guns:
4—5.5 inch, 50 cal.
1—3 inch (13 pdr.) 40 cal. A.A.
2 M.G.
Torpedo tubes:
6 above water in two triple U.D. mountings.
Searchlights:
2—30 inch.
Mines:
May be carried.
- Armour (unofficial):
2" or 1½" (H.T.) Side
amidships
—" Deck (H.T.) at
ends
—" C.T.



Ahead:
1—5.5 in.

Broadside: 4—5.5 in., 6—21 in. T.T.

Astern:
1—5.5 in.

Machinery: Parsons or Curtis turbines. 3 screws. Boilers: 10 Kampon. Designed H.P. 51,000 = 31 kts. Fuel: Coal and oil, normal, tons; maximum, 900 tons = 6000 miles at 10 kts. (unofficial).

Name	Builder	Machinery	Laid down	Completed	2nd Period.	Trials	Boilers
Tatsuta Tenryu	Sasebo D.Y. Yokosuka D.Y.	Kawasaki Mitsu Bishi	July, '17 May, '17	31 Aug., '19 20 Nov., '19	1927—35 1927—35	51,000 = 33 kts.	Kampon

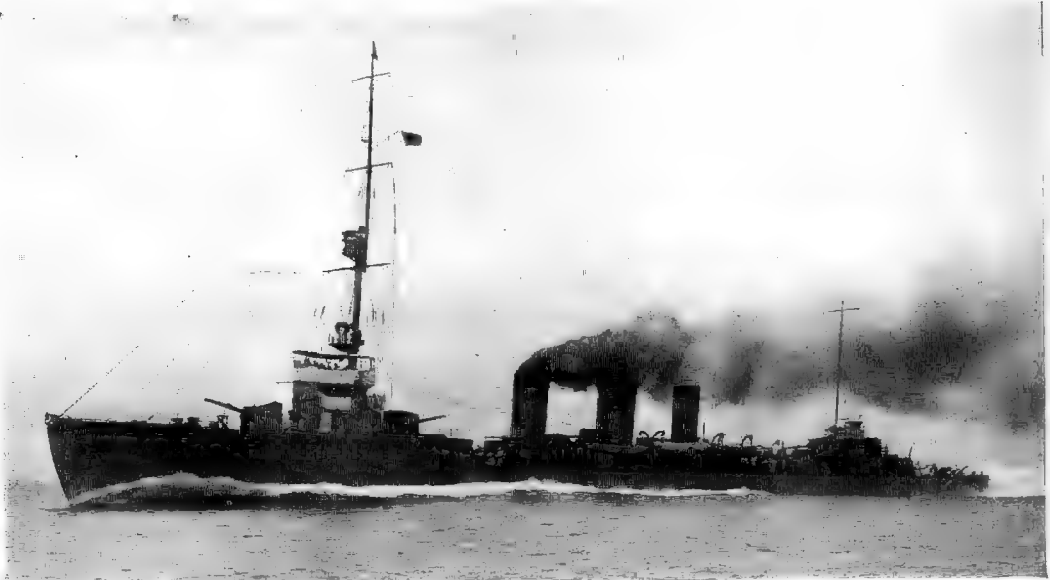


TATSUTA (Blast screen added forward of third gun).



TATSUTA. Note.—New heavy foremast is being fitted to this ship for mooring kite balloons. 1921 Photo, Navy Department, Tokyo.

General Notes.—Begun under the 1916 Naval Programme. Are said to be exceptionally fast and handy ships, able to turn in a little less than their own lengths. In design are simply enlarged destroyers, and very lightly framed. Both are employed as Flotilla Leaders.



TENRYU. (Now has tripod foremast.)

1923 Photo, Navy Department, Tokyo.



HIRADO.

1921 Photo, Navy Dept., Tokyo.

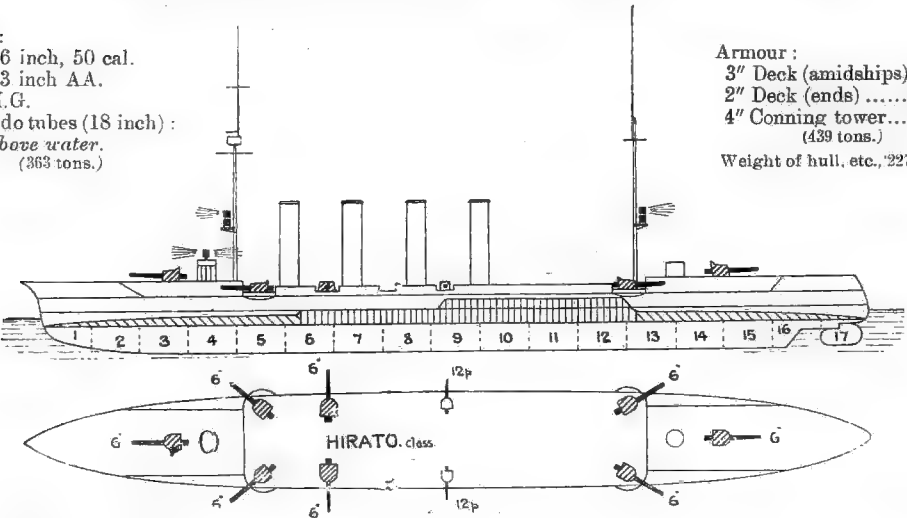
とらひ **HIRADO** (June, 1911), きはや **YAHAGI** (Oct., 1911).
まくち **CHIKUMA** (April, 1911)

Normal displacement 4950 tons. Complement 452.

Length (p.p.), 440 feet; (o.a.), 475 feet. Beam, 48½ feet. Max. draught, 17½ feet.

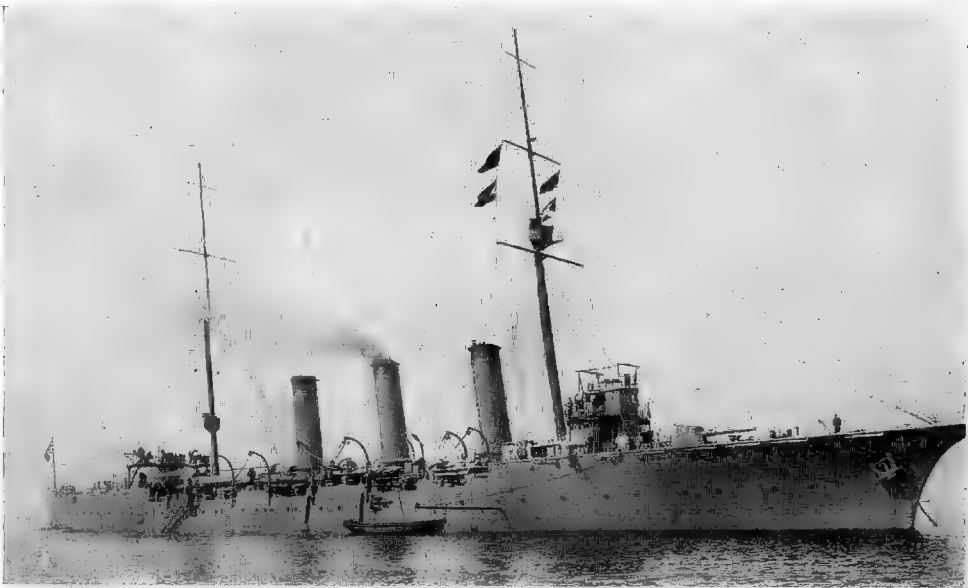
Guns:
8—6 inch, 50 cal.
2—3 inch AA.
2 M.G.
Torpedo tubes (18 inch):
3 above water.
(363 tons.)

Armour:
3" Deck (amidships)
2" Deck (ends)
4" Conning tower...
(439 tons.)
Weight of hull, etc., 2278 tons.



Machinery: Curtis turbines; (2 screws), except *Yahagi*, Parsons turbines. (4 screws). Boilers: 16 Kampon. Designed H.P. 22,500 = 26 kts. Coal: normal 500 tons; maximum 900 tons + 300 oil. = 10,000 miles at 10 kts.

Name	Builder	Machinery	Laid down	Completed	Third Period	Trials H.P. = kts.	Boilers
<i>Hirado</i>	Kawasaki Co.	Kawasaki Co.	Aug. '10	June '12	1928-36	27,408 = 26.8	Kampon in all.
<i>Yahagi</i>	Mitsui Bishi	Mitsui Bishi	June '10	July '12	1928-36	24,974 = 26.8	
<i>Chikuma</i>	Sasebo Yard	Kawasaki Co.	May '10	Apr. '12	1928-36		



1921 Photo, Navy Dept., Tokyo.

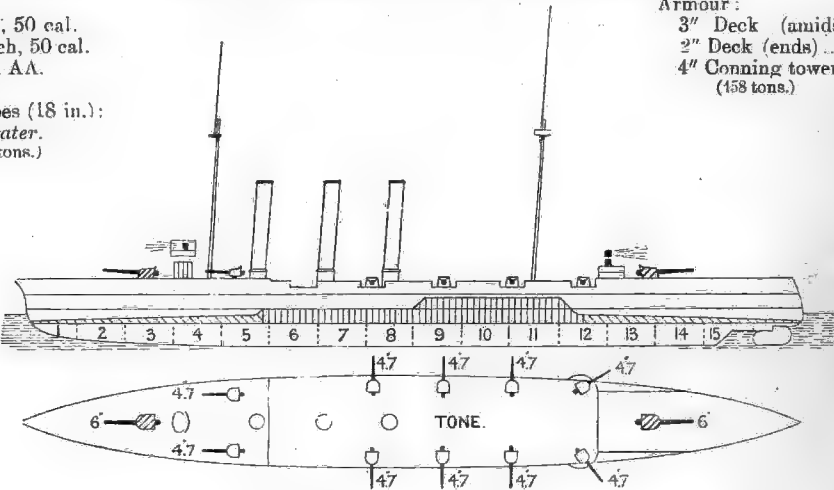
ね と **TONE** (Sasebo D.Y., launched Oct., 1907, completed 1909).

Normal displacement 4100 tons. Complement 401.

Length (p.p.), 360 feet; (o.a.), 406 feet. Beam, 47 feet. Mean draught, 17½ feet.

Guns:
2—6 inch, 50 cal.
10—4.7 inch, 50 cal.
2—3 inch AA.
2 M.G.
Torpedo tubes (18 in.):
3 above water.
(261 tons.)

Armour:
3" Deck (amidships)
2" Deck (ends)
4" Conning tower...
(158 tons.)

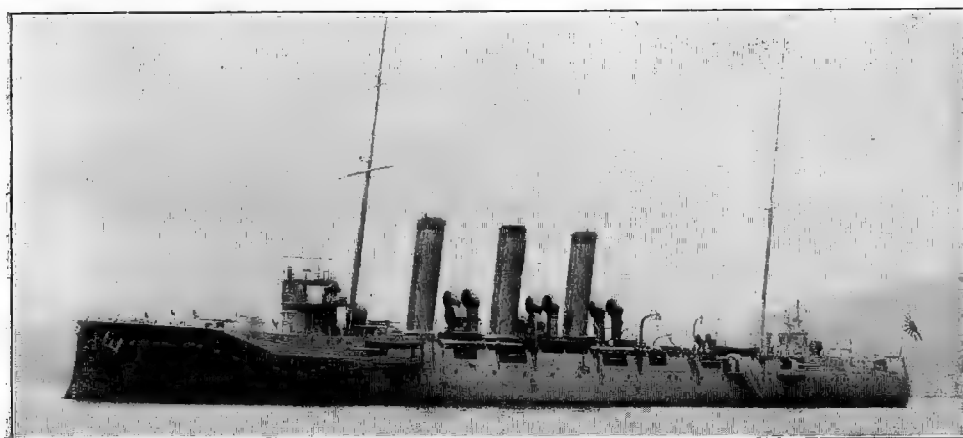


Ahead:
1—6 in.
2—4.7 in.

Astern:
1—6 in.
2—4.7 in.

Broadside: 2—6 in., 6—4.7 in.

Machinery (by Mitsui Bishi Co.): 2 sets triple expansion. 2 screws. Boilers: 16 Miyabara. Designed H.P. 15,000 = 23 kts. Coal: normal 300 tons; maximum 890 tons + 125 tons oil. A very successful ship. "Second period" of her existence expired 1925; now in "Third Period," 1925-33. Laid down 1906.

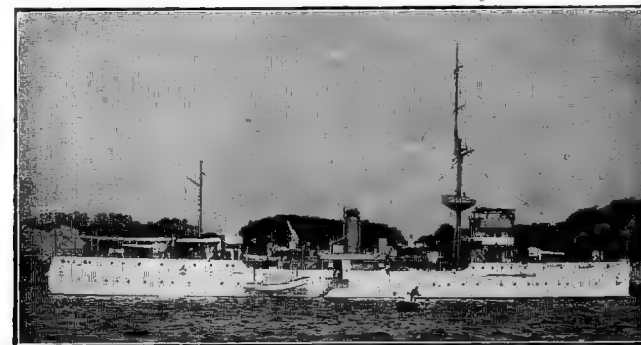


ましつ TSUSHIMA.

Re-rated as Second Class Coast Defence Vessel, 1921.

TSUSHIMA (Dec., 1902). Displacement, 3420 tons. Complement, 311. Length, 334½ feet. Beam, 44 feet. *Maximum* draught, 16 feet. Guns (Armstrong): 6—6 inch, 40 cal., 8—3 inch AA. Torpedo tubes: *None*. Armour (steel): 2½" Deck (Cellulose belt), 4" Conning tower (K.N.C.). Machinery: 2 sets triple expansion. 2 screws. Boilers: 16 Niclausse. Designed H.P. 9,400 = 20 kts. Coal: *normal* tons; *maximum* 600 tons. Laid down 1900 at Yokosuka and Kure. Completed 1904. Third Period expired 1928. ¶An excellent steamer. Sister ships, *Otoica*, wrecked 1917, and *Nitaka*, lost Aug., 1922.

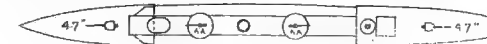
1st Class Gunboats (*Ito Hakan*). (Over 800 tons).



ATAKA.

1924 Photo, by courtesy of the Ministry of Marine.

ATAKA (Yokohama Dock Co., August, 1921). 820 tons. Complement, 118. Dimensions: 222 × 32 × 7½ feet. Guns: 2—4.7 inch, 2—3 inch AA. Machinery: Triple expansion. Designed H.P. = 16 kts. Boilers: 2 Kampon. Authorized under 1920-28 Fleet Law, laid down 1921, and completed 1922. In First Period. It is reported that this vessel has been specially equipped for submarine salvage work.



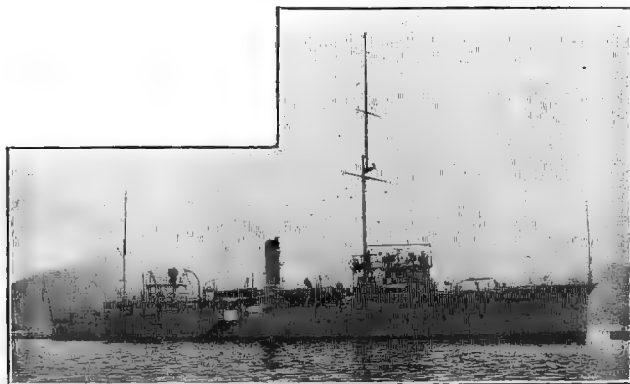
1921 Photo, Navy Dept., Tokyo.

YODO (Kobe, 1907). 1450 tons. Comp. 182. 280 (*p.p.*) 305½ (*o.a.*) × 32 × 11 feet. Guns: 2—4.7 inch, 50 cal., 4—12 pdr. Armour: 2½" deck. Torpedo tubes: 2—18 inch. Machinery: 2 sets 4-cyl. triple expansion. Designed H.P. 6500 = 22 kts. Boilers: 4 Miyabara. Coal: *normal* tons; *maximum*, 340 tons + 80 tons oil. In Third Period. Completed April, 1908. Employed recently in Surveying Service. Standard displacement is 1320 tons.



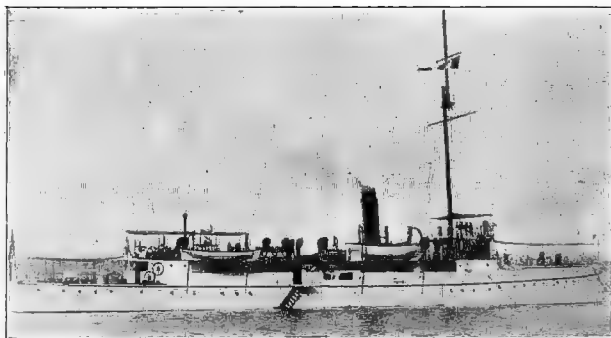
JAPAN—Gunboats.

2nd Class Gunboats (*Nito Hokan*). (Under 800 tons).



1918 Photo, by courtesy of the Navy Department.

SAGA (Sasebo, 1912). 780 tons. Complement 99. $210 \times 29\frac{1}{2} \times 7\frac{1}{2}$ feet. Guns: 1—4.7 inch, 3—3 inch AA., 3 M.G. Machinery: Triple expansion, 3 screws. Boilers: 2 Kampon. Designed H.P. 1600=15 kts. Coal: maximum 400 tons. In Third Period. Completed Nov., 1912.



UJI (1903). 620 tons. Complement 86. $180\frac{1}{2} \times 27\frac{1}{2} \times 7$ feet. Armament: 4—12 pdr, 3 M.G. H.P. 1000=13 kts. Belleville boilers. Coal: 150 tons. Built at Kure D.Y. Third Period expired 1927.

GUNBOATS—continued.

River Gunboats.

New Construction.

ATAMI (March 30th, 1929), *Futami*. Both laid down 1928, by Tama Works and Fujinagata Co., respectively. Displacement: 170 tons standard, 190 tons normal. Dimensions: $148\frac{3}{4} \times 22\frac{1}{2} \times 3$ feet. Guns: 1—3 inch. Speed: 16 kts. Machinery: 2 sets triple expansion. Boilers: 2 Kampon. Will replace *Fushimi* and *Sumida*.

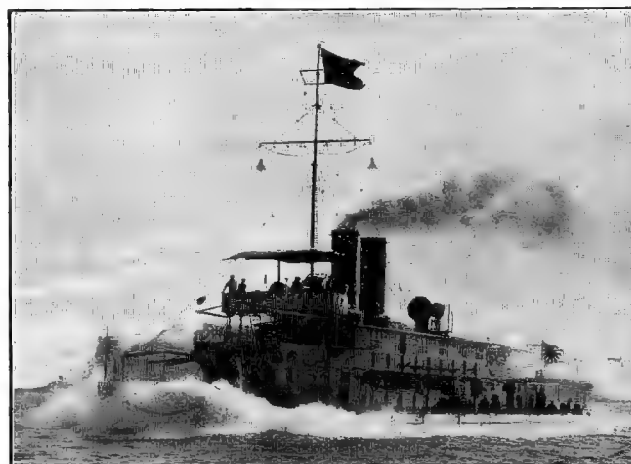


KATATA.

Photo added 1925.

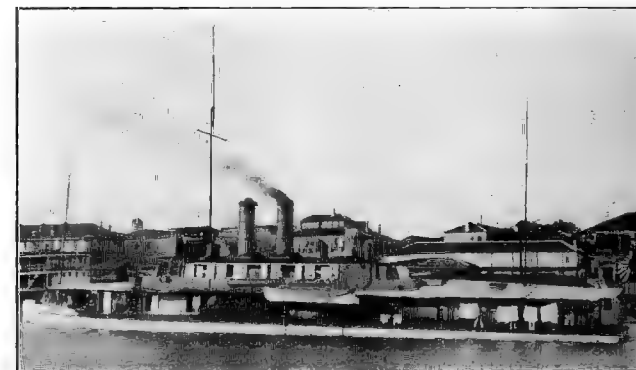
Name.	Builder.
HIRA (1922)	Mitsu Bishi, Kobe.
HODZU (1922)	
KATATA (1923)	Kobe Steel Works.
SETA (1923)	

Displacement, 340 tons. Dimensions: $180 \times 27 \times 3\frac{1}{2}$ feet. Guns: 2—12 pdr., 6 M.G. Machinery: 2 sets triple expansion. Boilers: 2 Kampon. Designed H.P. 2100=16 kts. In First Period. Authorised under 1920-28 Fleet Law. Laid down 1922 and completed 1923.

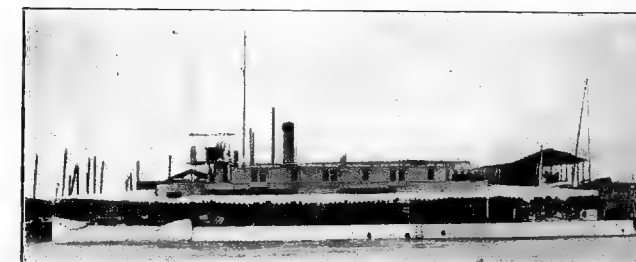


TOBA (1911). 250 tons. Complement 59. $180 \times 27 \times 2\frac{1}{2}$ feet. Guns: 2—12 pdr., 6 M.G. 1400 H.P.=15 kts. Coal: 80 tons. Built at Sasebo D.Y. In Third Period.

River Gunboats—continued.



FUSHIMI (1906). 160 tons. Complement 45. $160 \times 24\frac{1}{2} \times 2\frac{1}{4}$ feet. Guns: 2—6 pdr., 4 M.G. 800 H.P.=14 kts. Yarrow boilers. Coal: 25 tons. Built by Yarrow, at Poplar. In Third Period.



SUMIDA (1903). 126 tons. Complement 40. $145 \times 24 \times 2$ feet. Guns: 2—6 pdr., 4 M.G. 600 H.P.=13 kts. Thornycroft boilers. Coal: 40 tons. Built by Thornycrofts, at Chiswick. Third Period expired 1927.

DESTROYERS.

Destroyer Table—JAPAN

112* + § 22 Destroyers. (*Kuchikukan*).

Note.—Under the new Fleet Replenishment Programme, 15 new Destroyers of 1,400 tons are projected; some of smaller size may also be built.

* In service or completing. § Authorised, or on order

Boats of 1000 tons and over are officially rated first class; 1000—600, second class.

"Period"	Totals.	Class.	First Begun.	Last Completed.	Displacement.	Dimensions. Length (p.p.) × Beam × Max. Draught.	H.P.	Max. Speed.	Fuel. Coal/Oil.	Guns.	Torpedo Tubes.	Searchlights.	Complement.
					tons.			kts.	tons.				
1st	15	First Class :— <i>New</i>	(Projected)		1400								
	24	<i>Fubuki</i>	1926	<i>Bldg.</i>	1700	367½ × 34 × 10½	50,000	35	400 ?	{ 6—4.7 inch 2 M.G.	9—21 inch	1—	197
	12	<i>Mutsuki</i>	1923	1927	1445	320 × 30 × 9½	40,000	34	350	{ 4—4.7 inch 2 M.G. A.A.	6—21 inch	{ 3—30 inch 2—30 inch	150 148
	9	<i>Kamikaze</i>	1922	1925	1400	320 × 30 × 9½	38,500t						
	15	<i>Minakaze</i>	1918	1922	1345	320 × 29½ × 9½	38,500t	34	315	{ 4—4.7 inch 2 M.G. (A.A.)	6—21 inch	2—30 inch	145—148
2nd	2	<i>Tanikaze</i>	1916	1919	1300	320 × 29½ × 9½	28,000t	34	315	{ 3—4.7 inch 2 M.G.	6—21 inch	2—30 inch	128
	4	<i>Amatsukaze</i>	1915	1917	1227	310 × 28 × 10½	27,000t	34	145+195	{ 4—4.7 inch 2 M.G.	6—18 inch	1—30 inch	145
	1	<i>Urakaze</i> (Y)	1913	1915	1000	275 × 27½ × 10½	22,000t	28	248	{ 1—4.7 inch 4—12 pdr.	4—21 inch	1— inch	117
3rd	2	<i>Unikaze</i>	1908	1911	1150	310 × 27½ × 9½	19,500t	31.5	250+180	{ 2—4.7 inch 5—12 pdr.	4 or 3—18 inch	1— inch	139
1st	8	Second Class :— <i>Wakatake</i>	1921	1924	850—900	275 × 26 × 8—8½	21,000t	31.5	275	{ 3—4.7 inch 2 M.G. (A.A.)	4—21 inch	1—30 inch	110
	7	<i>Ashi</i>	1920	1922									
	13	<i>Momi</i>	1918	1920									
2nd	6	<i>Tsubaki</i>	1917	1918	850	275 (o.a.) × 25 × 7½—8	16,000t	31.5	90+210	{ 3—4.7 inch 2 M.G.	6—18 inch	1— inch	109
	4	<i>Momo</i>	1915	1916									
	10	<i>Kaba</i>	1914	1915	665	260 × 24 × 7¼—7½	9,500	30	90+125	{ 1—4.7 inch 2—12 pdr.	4—18 inch	1— inch	92
	2	<i>Sakura</i>	1911	1913	600		9,500t	30	125—30				

(Y)=Yarrow type. t=Turbine.

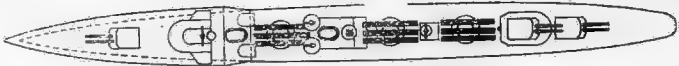
56*+13§ 1st Class Destroyers (over 1000 tons).

* In service or completing. § Authorised or on order.

24 Fubuki Class.



1929 Photo.



24 boats: **Fubuki, Shirayuki, Hatsuyuki, Miyuki, Murakumo, Shinonome, Usugumo, Shirakumo, Isonami, Uranami, Ayanami** (ex-Nos. 35-45) **Asagiri, Amagiri, Sagiri, Shikinami, Yugiri, Ushio**, and 7 unnamed. Authorised under 1926 and subsequent sections of the Fleet Replenishment Law. 1700 tons (1850 tons full load). Dimensions: 367½ x 34 x 10½ feet. Armament: 6—4.7 inch, 50 cal., 2 A.A. M.G. and 9—21 inch tubes. Machinery: Parsons geared turbines. Boilers: Kampon. H.P. 50,000 = 35 kts. Oil: 400 tons? Complement 197.

Name.	Begun.	Launch.	Comp.	Name.	Begun.	Launch.	Comp.	Name.	Begun.	Launch.	Comp.
Fubuki ..	6/26	12/27		Usugumo ..	26	26/12/27	10/5/29	Asagiri ..		28	
Shirayuki ..	11/26	3/28		Shirakumo ..	26	27/12/27	31/12/28	Amagiri ..		28	
Hatsuyuki ..	26	29/9/28		Isonami ..	26	24/11/27		Sagiri ..		28	
Miyuki ..	26	6/28	6/29	Uranami ..	27	29/11/28	4/20	Shikinami ..	7/28		
Murakumo ..	27	7/28		Ayanami ..	27			Yugiri ..	4/4/29		
Shinonome ..	8/26	26/11/27						Ushio ..		29	

Notes.—Builders not fully advised, but **Fubuki, Hatsuyuki** and **Shikinami** are by Maidzuru D.Y.; **Shirayuki** by Yokohama D.Y. Co.; **Miyuki, Ushio, Isonami** by Uraga D. Co.; **Shinonome** and **Asagiri** by Sasebo D.Y.; **Usugumo** and **Amagiri** by Ishikawajima Co.; **Shirakumo, Murakumo, Yugiri** by Fujinagata Co.

Meanings of some of above names are as follows:—

Fubuki Snowstorm	Shinonome Day dawn	Amagiri Heaven mist
Shirayuki White snow	Usugumo Fleecy clouds	Sagiri Valley mist
Hatsuyuki First snow of winter	Shirakumo White cloud	Yugiri Evening mist
Murakumo Cloud clusters	Asagiri Morning mist	Shikinami Waves chasing each other.
		Ushio The tide.

12 Mutsuki Class.



KISARAGI.

Photo added 1927.



UTSUKI.

Photo added 1927.

12 boats: **Mutsuki** (ex-No. 19), (by Sasebo Dockyard), **Kisaragi** (ex-No. 21), (by Maidzuru Dockyard), **Yayoi** (ex-No. 23), (by Uraga Dock Co.), **Utsuki** (ex-No. 25), (by Ishikawajima Co.), **Satsuki** (ex-No. 27), (by Fujinagata Co.), **Minatsuki** (Uraga Dock Co.), **Fumitsuki** (Fujinagata Co.), **Nagatsuki** (Ishikawajima Co.), **Kikutsuki** (Maidzuru Dkyd.), **Mikadzuki** (Sasebo Dkyd.), **Mochidzuki** (Uraga Dock Co.), **Yudzuki** (Fujinagata Co.), (ex-Nos. 28-34). Enlarged editions of **Kamikaze**. Built under 1923, 1924 and 1925 sections of Navy Law. 1445 tons. Dimensions: 320 (p.p.) x 30 x 9½ feet (max. draught). Armament: 4—4.7 inch, 50 cal., 2 A.A. M.G. and 6—21 inch tubes (in triple deck mountings). 3 S.L. Machinery: Parsons 4-shaft turbines, 4 Kampon boilers. Designed H.P. 40,000 = 34 kts. Oil: 350 tons. Endurance: 4000 miles at 15 kts. Complement, 150.

Name.	Begun.	Launch.	Comp.	Name.	Begun.	Launch.	Comp.
Minatsuki ..	24/3/25	25/5/26	22/3/27	Mutsuki ..	21/5/24	23/7/25	25/3/26
Fumitsuki ..	20/10/24	16/2/26	3/7/26	Kisaragi ..	3/6/24	5/6/25	21/12/25
Nagatsuki ..	16/4/25	6/10/26	30/4/27	Yayoi ..	11/1/24	11/7/25	28/8/26
Kikutsuki ..	15/6/25	15/5/26	20/11/26	Utsuki ..	11/1/24	15/10/25	14/9/26
Mikadzuki ..	21/8/25	12/7/26	7/5/27	Satsuki ..	1/12/23	25/3/25	15/11/25
Mochidzuki ..	23/3/26	28/4/27	31/10/27				
Yudzuki ..	27/11/26	4/6/27	25/7/27				

Note.—These 12 destroyers bear poetical names of the 12 months of the year.

9 Kamikaze Class.



HARUKAZE.

Photo added 1927.

Kamikaze Class—continued.



ASAKAZE.

1925 Photo, by courtesy of the Navy Dept., Tokyo

9 boats: **Kamikaze** (ex-No. 1) and **Asakaze** (ex-No. 3) (both by Mitsu Bishi, Z.K.), **Harukaze** (ex-No. 5), **Matsukaze** (ex-No. 7), **Hatakaze** (ex-No. 9), (all three by Maizuru D.Y.), **Oite** (ex-No. 11), (by Uruga Dock Co.), **Hayate** (ex-No. 13), (by Ishikawajima Co.), **Asanagi** (ex-No. 15), (by Fujinagata Co.), **Yunagi** (ex-No. 17), (by Sasebo Dockyard.)

Of same general design as **Shiokaze** class. Built under 1921 and 1922 Sections of Navy Law. 1400 tons. Dimensions: 320 (p.p.) \times 30 \times 9 $\frac{1}{2}$ feet (max. draught). Armament: 4—4.7 inch, 50 cal., 2 A.A. M.G. and 6—21 inch torpedo tubes. 2 S.L. Machinery: Parsons 4-shaft turbines. 4 Kampon boilers. Designed H.P. 38,500 = 34 kts. Oil: 350 tons. Endurance: 4000 miles at 15 kts. Complement, 148.

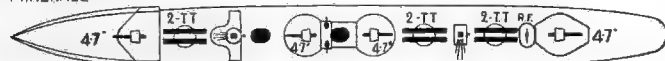
Name.	Begun.	Launch.	Comp.	Name	Begun.	Launch.	Comp.
Kamikaze	15/12/21	25/9/22	23/12/22	Hayate	11/11/22	23/3/25	21/12/25
Asakaze	16/2/22	8/12/22	16/6/23	Asanagi	5/3/23	21/4/24	29/12/24
Harukaze	16/5/22	18/12/22	31/5/23	Yunagi	17/9/23	23/4/24	24/4/25
Matsukaze	2/12/22	30/10/23	5/4/24				
Hatakaze	3/7/23	15/3/24	30/8/24				
Oite	16/3/23	27/11/24	30/10/25				

Meanings of some of the above names:—

Asakaze	Morning breeze	Matsukaze	Wind in the pine trees	Asanagi	Morning calm
Harukaze	Spring breeze	Oite	Fair wind	Yunagi	Evening calm

15 Minekaze class. (7 Minekaze + 8 Shiokaze.)

MINEKAZE



AKIKAZE.

1921 Photo, Navy Department, Tokyo.

8 **Shiokaze** class: **Akikaze** and **Yukaze** (both by Mitsu Bishi Z.K., Nagasaki); **Hokaze**, **Shiokaze**, **Tachikaze**, **Namikaze**, **Numakaze**, **Nokaze**, (all six by Maizuru D.Y.). Believed authorised under the 1919 and 1920 Sections of the 1918-24 Navy Law. All details as **Minekaze** class below, but these boats have 4 Kampon boilers only.

7 **Minekaze** class: **Minekaze**, **Okikaze**, **Nadakaze**, **Shimakaze**. All by Maizuru D.Y.; **Sawakaze**, **Hakaze** and **Yakaze** all built by Mitsubishi Co., at Nagasaki or Kobe. Normal displacement 1345 tons. Dimensions: 320 (p.p.) \times 338 $\frac{1}{2}$ (o.a.) \times 29 $\frac{1}{2}$ \times 9 $\frac{1}{2}$ feet (mean draught). Armament: 4—4.7 inch, 45 cal., 2 M.G. (A.A.), and 6—21 inch torpedo tubes. 2—30 inch searchlights. Designed S.H.P. 38,500 = 34 kts. Machinery: Parsons 4 shaft turbines and 4 Kampon or Kansei boilers. Oil: 315 tons. Complement: **Minekaze**, **Sawakaze**, 145, others 148. **Minekaze** and **Sawakaze** belong to the 1917 Programme; **Okikaze**, **Nadakaze**, **Shimakaze**, **Hakaze** and **Yakaze** to the 1918 Programme.

2 Tanikaze class.

TANIKAZE



TANIKAZE.

1921 Photo, Navy Dept., Tokyo.

2 **Tanikaze** class: **Tanikaze** (Maizuru D.Y., July, 1918) and **Kawakaze** (Yokosuka D.Y., 1917). 1300 tons. Dimensions: 320 \times 294 \times 9 $\frac{1}{2}$ feet. Armament: 3—4.7 inch, 45 cal., 2 M.G., 6—21 inch tubes in three twin deck mountings. 2—30 inch searchlights. Designed H.P. 28,000 = 34 kts. Machinery: Parsons turbines. Boilers: 4 Kansei. Oil fuel only, 315 tons. Complement, 128. Begun under 1916 Programme.

4 Amatsukaze class.

AMATSUKAZE



AMATSUKAZE.

1921 Photo, Navy Dept., Tokyo.

4 **Amatsukaze** class: **Amatsukaze** and **Isokaze** (both launched at Kure, Oct., 1916). **Hamakaze** (Nagasaki, Oct., 1916), and **Tokitsukaze** (Kobe, Dec., 1916). 1227 tons. Dimensions: 310 (p.p.), 326 $\frac{1}{2}$ (o.a.) \times 28 \times 9 $\frac{1}{2}$ feet. Armament: 4—4.7 inch (40 cal.), 2 M.G., and 6—18 inch tubes in 3 twin deck mountings. 1 searchlight. Machinery: 3 sets Parsons turbines and Kansei boilers. Designed H.P. 27,000 = 34 kts. Fuel: 145 tons coal + 195 tons oil. Endurance: 4000 miles at 15 kts. Complement, 145. Built under the 1915 Naval Programme.

*Note.—**Tokitsukaze** wrecked; salvaged in three sections, March, 1918, and practically rebuilt at Maizuru D.Y.

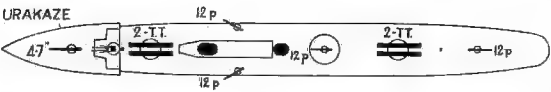
(Continued on next page.)

JAPAN—Destroyers.

DESTROYERS.

1st Class Destroyers—continued.

1 Special Boat.

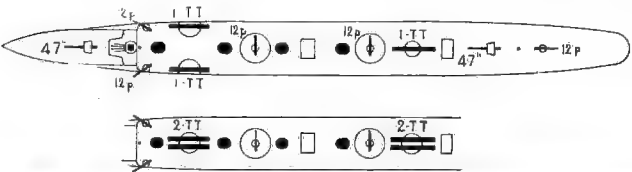


1921 Photo, Navy Department, Tokyo.

1 Yarrow type: **Urakaze** (Yarrow, Scotstoun, 1915). 1000 tons. Dimensions: 275 (p.p.) 283 (o.a.) × 27.5 × 9.5 feet. Armament: 1—4.7 in., 4—12 pdr., 4—21 inch tubes in two twin deck mountings. Machinery: 22,000 H.P. turbines=28 kts. Yarrow large tube boilers. Fuel: 248 tons oil only. Endurance about 1800 miles at 15 kts. Complement, 117. Trials: 30-26 kts. at 1082 tons load displacement.

Note.—It was intended that this boat should have a Diesel engine for cruising speed, combined by Föttinger hydraulic transmission to the turbines. Owing to the War, the Föttinger gear and Diesel engine were never delivered. They were replaced by a big oil tank. *Kawakaze* (sister-boat) ceded to Italy, and now Italian *Audace*.

These plans represent, first, the original T.T. position; second, positions now believed to exist.



2 Umikaze Class.



UMIKAZE.

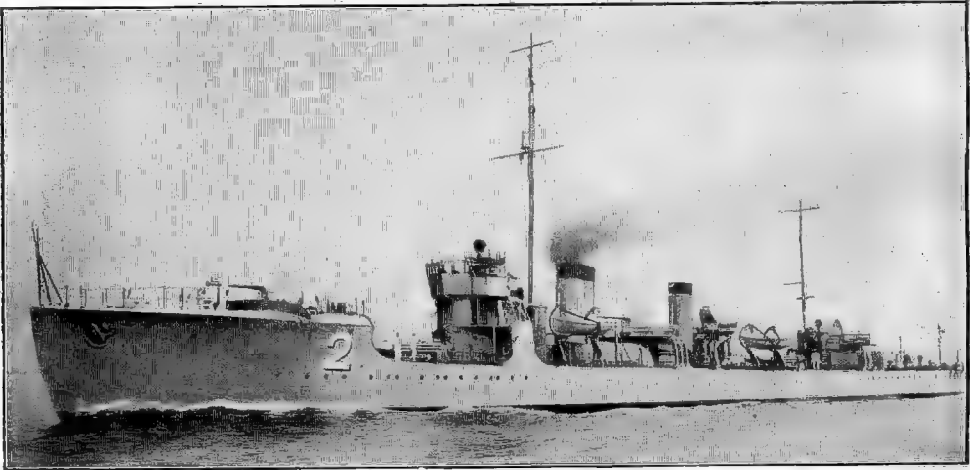
1921 Photo, Navy Department, Tokyo.

2 Umikaze class: **Umikaze** (Maidzuru, 1910) and **Yamakaze** (Nagasaki, 1911). 1150 tons. Dimensions: 310 (p.p.) 323½ (o.a.) × 27½ × 9 feet (mean draught). Armament: 2—4.7 inch (40 cal.), 5—12 pdr. Torpedo tubes: 4—18 inch in two twin deck mountings. 1 searchlight. Machinery: 3 sets Parsons turbine and Kasei boilers. Designed H.P. 19,500 = 31.5 kts. Fuel: 250 tons coal + 180 tons oil = 2700 miles at 15 kts. Complement, 139. Trials: *Umikaze* 33.46 kts.

50 2nd class Destroyers. (1000 to 600 tons).

Note.—No more 2nd Class Destroyers are to be built.

8 Wakatake Class.



WAKATAKE.

1925 Photo, by courtesy of the Navy Dept., Tokyo.

8 Wakatake class: **Wakatake** (ex-No. 2) and **Kuretake** (ex-No. 4), (both by Kawasaki Co., Kobe); **Sanaye** (ex-No. 6) and **Sawarabi** (ex-No. 8), (both by Uruga Dock Co.); **Asagao** (ex-No. 10), and **Yugao** (ex-No. 12), (both by Ishikawajima Co.); **Fuyo** (ex-No. 16) and **Karukaya** (ex-No. 18), (both by Fujinagata Co.).

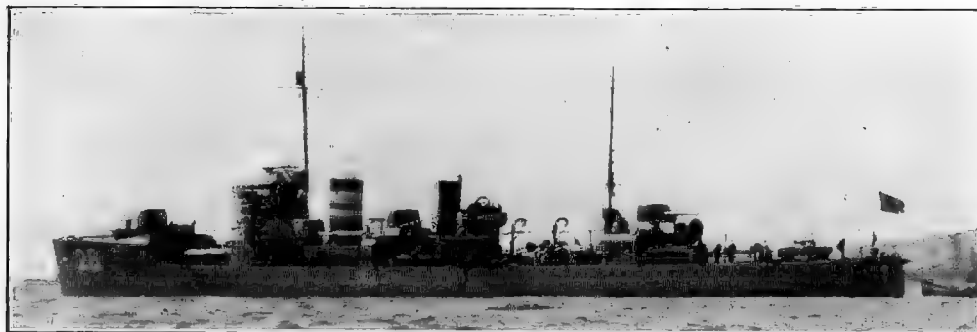
Built under 1921 Naval Programme. Particulars and general design are the same as *Ashi*, *Kiku* and *Momi* classes on next page, with the exception of displacement, which is increased to 900 tons, and dimensions, 275 × 26½ × 8½ feet.

Name.	Begun.	Launch.	Comp.	Name.	Begun.	Launch.	Comp.
Wakatake	13/12/21	24/7/22	30/9/22	Asagao	..	14/3/22	4/11/22
Kuretake	15/3/22	21/10/22	21/12/22	Yugao	..	15/5/22	14/4/23
Sanaye	5/4/22	15/2/23	5/11/23	Fuyo	..	16/2/22	23/9/22
Sawarabi	20/11/22	1/9/23	24/7/24	Karukaya	..	16/5/22	19/3/23

All this class originally bore numbers only. Names were conferred on August 1st, 1928.

(Continued on next page.)

20 Momi class (13 Momi + 7 Ashi).



HASU.

Photo added 1927.



YOMOGI.

Photo added 1927.

13 Momi class: **Momi** and **Kaya** (Yokosuka D.Y.), **Kuri** and **Nire** (Kure D.Y.), **Nashi**, **Take**, **Aoi** and **Kiku** (Kawasaki Co., Kobe), **Hagi** and **Kaki** (Uraga Co.), **Susuki** and **Tsuga** (Ishikawajima Co.), **Fuji** (Fujinagata Co., Osaka). 850 tons. Dimensions: 275 (p.p.) × 28 × 8 feet. Armament: 3—4.7 inch, 45 cal., 2 M.G. (A.A.), 4—21 inch torpedo tubes in two twin-deck mountings. 1—30 inch searchlight. Designed S.H.P. 21,000=31.5 kts. Machinery: Parsons direct drive turbines. + 3 Kampon boilers. 2 screws. Oil: 275 tons. Endurance: 3,000 miles at 15 kts. Complement, 110. Built under 1918-19 Programme.

7 Ashi class: **Ashi** and **Tsuta** (Kawasaki Co.), **Hasu** and **Hishi** (Uraga Dock Co.), **Sumire** and **Yomogi** (Ishikawajima Co.), **Tade** (Fujinagata Co., Osaka). All details as Momi class, but 2 searchlights carried. Begun under 1920 Naval Programme.

Note.—*Warabi*, of this class, lost by collision, 24th Aug., 1927. *Fuji*, in the above case, means *Wistaria*.



10 Momo class.

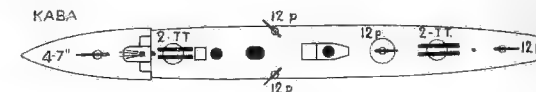


YANAGI.

1926 Photo, Seward, Weymouth.

10 Momo class: **Maki** and **Keyaki** (Sasebo D.Y., 1918), **Kuwa** and **Tsubaki** (Kure D.Y., 1918), **Enoki** (Maidzuru D.Y., 1918), and **Nara** (Yokosuka D.Y., 1918). **Yanagi** (1917) and **Momo** (1916), both built at Sasebo; **Kashi** (1916) and **Hinoki** (1916), both built at Maidzuru. 835 tons. Dimensions: 275 (o.a.) × 25 × 7½ feet. Armament: 3—4.7 inch, 1 M.G., 1 small A.A. gun, and 6—18 inch tubes in two triple mountings. One searchlight. Machinery: 3 sets Curtis turbines and 4 Kansei boilers. Designed H.P. 16,000=31.5 kts. Fuel: 92 tons coal + 212 tons oil. Complement, 109. The first six provided for by Special 1917 Programme. The last four built under the 1915 Naval Programme.

10 Kaba class.



SAKAKI.

Photo added 1927.

10 Kaba class:—**Kaba** (Yokosuka), **Kaede** (Maidzuru), **Kashiwa** and **Matsu** (Nagasaki), **Katsura** (Kure), **Kiri** (Uraga), **Kusunoki** and **Ume** (Kobe), **Sakaki** (Sasebo), and **Sugi** (Osaka). All launched February–March, 1915. 665 tons. Dimensions: 260 (p.p.) 274 (o.a.) × 24 × 7.9 feet. Armament: 1—4.7 inch, 4—12 pdr., (2 anti-aircraft model) and 4—18 inch tubes. Machinery: 3 sets, 4-cylinder triple expansion and 4 Kampon boilers. Designed H.P. 9,500=30 kts. Fuel: 90 tons coal + 135 tons oil. Endurance: 2,400 miles at 15 kts. Complement, 92. These boats are said to have been built in seven months. Built under 1914 Naval Programme, and majority served in Mediterranean during war. 12 Replicas built in Japanese Yards for French Navy—see French *Algerien* class.

(Continued on next page.)

JAPAN—Destroyers, Minesweepers, C.M.B and S/M.

DESTROYERS, MINESWEEPERS, AND C.M.B's.

2nd Class Destroyers—continued.

2 Sakura Class.

(Plan as for *Kaba* class, but beam 12 pdr. just abaft 1st funnel.)

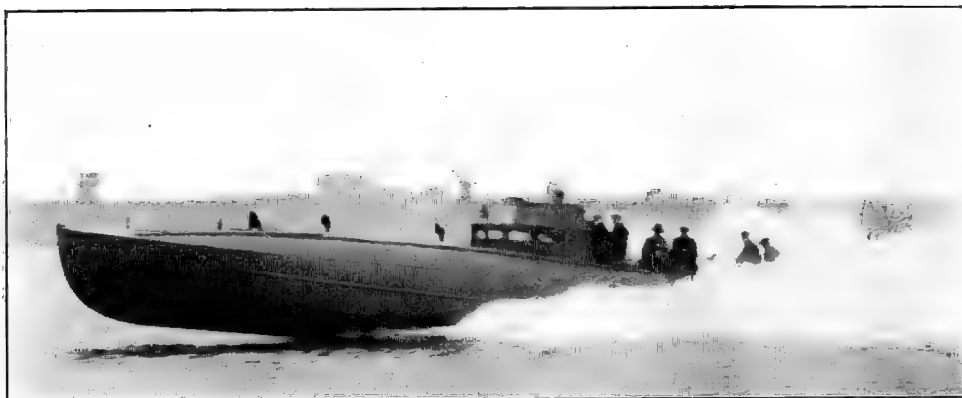


SAKURA.

1921 Photo, Navy Department, Tokyo.

2 *Sakura* class:—*Sakura* (1911), *Tachibana* (1912). Both built at Maizuru. 605 tons. Fuel: 125 tons coal + 30 tons oil; otherwise as 10 *Kaba* class, above.

Coastal Motor Boats.



C.M.B.

Photo by courtesy of Messrs. Thornycroft, (Builders).

2 of Thornycroft 55 ft. type (1923): Each carries two 18 inch torpedoes, 2 Lewis Guns and 2 D.C. 2 sets of Thornycroft Y. 12 type motors of 350 B.H.P. = 38 kts. Complement, 5.

Note.—Present condition of these vessels is doubtful. It is possible that they have ceased to be effective.

Minesweepers.



MINESWEEPER No. 3.

1927 Photo, by courtesy of Navy Dept.



MINESWEEPER No. 6.

1929 Photo.

Nos. 1 (Kobe Steel Works, March, 1923), 2 (Tama Works, 1923), 3 (Osaka Iron Works, 1923), 4 (Sasebo, 1923), 5, and 6 (both Sasebo, Oct., 1928). All provided by 1920-28 Fleet Replenishing Law. 700 tons. $235 \times 26\frac{1}{2} \times 7\frac{1}{2}$ feet. Guns: 2—4.7 inch, 2—3 inch AA. 2 D.C. throwers. Complement, 87. Triple expansion engines. 3 Kampon boilers. H.P. 2000=20 kts.

7 ex-Destroyers, Nos. 7 (ex-Isonami), 8 (ex-Uranami), 9 (ex-Ayanami), 10 (ex-Minatsuki), 11 (ex-Nagatsuki), 12 (ex-Kikudzuki), are now rated as Minesweepers. All belong to later *Arare* type. 381 tons. Dimensions: $234\frac{1}{2}$ (o.a.) $\times 21\frac{1}{2} \times 6$ feet. Guns: 6—3 inch. 1 S.L. Designed H.P. 6000 = 29 kts. Fuel: Nos. 7, 8, 9, 95 tons coal + 15 tons oil; others, 100 tons coal. Complement, 61.

Some of the Mine Layers, detailed elsewhere, probably equipped also as Mine Sweepers. No exact details known.

SUBMARINES.

67* + 4† = 71 submarines. (*Sensuikan*).

*Built or completing. †Ordered or authorised.

Period.	No.	Type.	Date.	Dis- place- ment.	H.P.	Max. speed.	Fuel.	Com- ple- ment.	T. Tubes.	Max. draught.
FIRST		1st Class :—		tons		kts.	tons.			
	4	I 64—67 (K)	'27—?	1650 2220	?	?	?	?	6/8	16
	2	I 61—62 (M)	'26—'29	1650	6000	21 10	?	?	6/8	16½
	9	I 53—60, I 63	'24—'29	2200						
	2	I 51—52 (K)	'21—'25	1400 2900	5200/6000 1800	20 9	Over 100 ?	57/60		17
	4	I 21—24 (KK) (Minelayers)	'24—'28	1150 1750	4000	?	?		4	14½
	5	I 1—5 (KK)	'23—'29	1970 2500	6000	17.5	?	?	6	16
		2nd Class :—								
	9	Ro. 60—68 (M)	'21—'26	998 1500	2400 1600	16 10	75	48	6	13
	9	Ro. 51—59 (M)	'18—'23	900 1082	2400 1200	17 10	65	48	6	12½
	4	Ro. 29—32 (KK)	'21—'25	770 1000	2400 1200	13 10	60	43	6	12
	3	Ro. 26—28 (K)	'21—'24	750 1090	2600 1200	16 10	65	40	4	12
	9	Ro. 16—24* (K)	'19—'22	740 1100	2600 1200	17 10	65/75	40/45	6	12
	3	Ro. 13—15 (K)	'18—'21	740 986	2600 1200	17 10				
	2	Ro. 11, 12 (K)	'17—'19	720 1035	1800 1200	18 9.7				
Second	3	Ro. 3—5 (KK)	'19—'22	700 1092	2600	18	59/65	40	5	13½
First	2	Ro. 1, 2 (KK)	'17—'29	689 1072	1200	9.5				
Second										

* Ro. 25 non-effective, and being utilised for experimental purposes.
(K)=Kaigun (Navy Department) design. (KK)=Kawasaki-Kobe design. (SL)=Schneider-Laubeuf design.
(V)=Vickers type. (VK)=Vickers-Kaigun type. (M)=Mitsu Bishi or Mitsu Bishi-Vickers design. (SLK)=
Schneider-Laubeuf design modified by Navy Dept.
Details, all types, officially revised by Navy Dept., Tokyo, 1929, and can be considered as fairly reliable. All 5 and 6-tube boats are believed to carry 10 torpedoes; others carry from 4 to 6, except Ro. 51—68, which have 8 or 10, and non-minelaying 1st class boats, which may carry more still. Recently the patents of two German patterns of periscope (Goerz and Humbrecht) were acquired.

The 1st class submarines are subdivided into following categories:—
Fleet (I 1—5), Cruising (I 51—67), Minelaying (I 21—24).

Submarines—JAPAN

First Class Submarines (over 1000 tons).

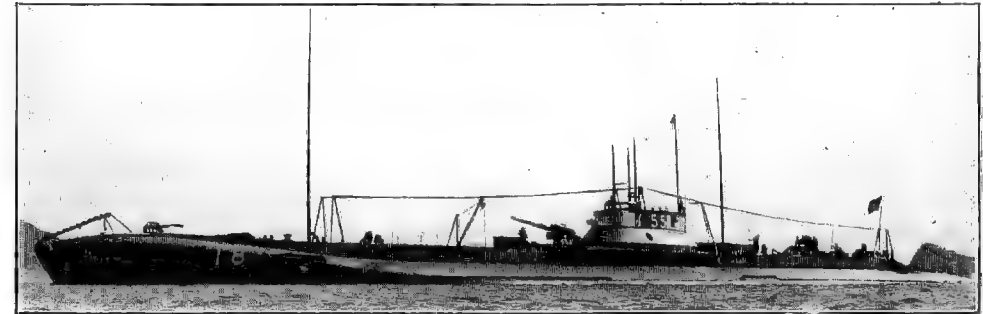
4 Kaigun Type. (Building or authorised)

4 boats: I 61 to I 67. 1650 tons. Understood to be improvements upon I 53 class. Armament believed to be 1, if not 2—4.7 inch guns, with smaller AA. and 8—21 inch tubes.

2 Mitsu Bishi Type. (Completing.)

2 boats: I 61 (Nov. 12th, 1927). I 62 (Nov. 29th, 1928). Both by M.B.Z.K., Kobe. Laid down Nov., 1926 and April, 1927, respectively. Dimensions: 320½ × 25½ × 16 feet. Other details as 9 Kaigun type below, but 6 torpedo tubes.

9 Kaigun Type.

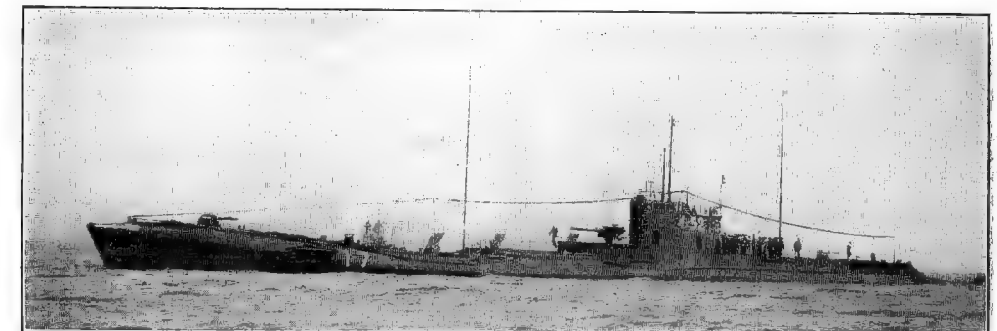


I 55.

1928 Photo.

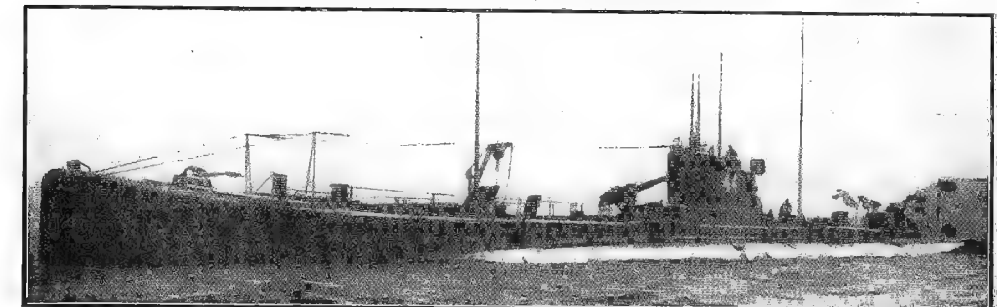
9 boats: I 53 (ex-No. 64, Kure, Aug. 5th, 1925). I 54 (ex-No. 77, Sasebo, March 15th, 1926). I 55 (ex-No. 78, Kure, Sept., 1925). I 56 (Kure, March, 1928). I 57 (Kure, Nov., 1928). I 58 (Yokosuka, Oct. 3rd, 1925). I 59 (Yokosuka, March 25th, 1929). I 60 (Sasebo, April 24th, 1929). I 63 (Sasebo, Sept. 28th, 1927). Displacement: 1650 tons. Dimensions: I 53—55, 330 × 26 × 16½ feet. I 56—60 and I 63, 331½ × 26 × 16½ feet. Armament: 1—4.7 inch, 1—8 inch AA., 8—21 inch tubes. Machinery: 2 sets Diesels, combined B.H.P. 6000. Designed speed: 17½ kts. Believed begun under 1923-25 Programmes. Cruising radius is undoubtedly very large, 16,000 miles being spoken of. They are supposed to be capable of crossing the Pacific and returning without refuelling. This design is the fruit of experience gained with I 51 and I 52.

2 Kaigun Type.



I 52.

1926 Photo.



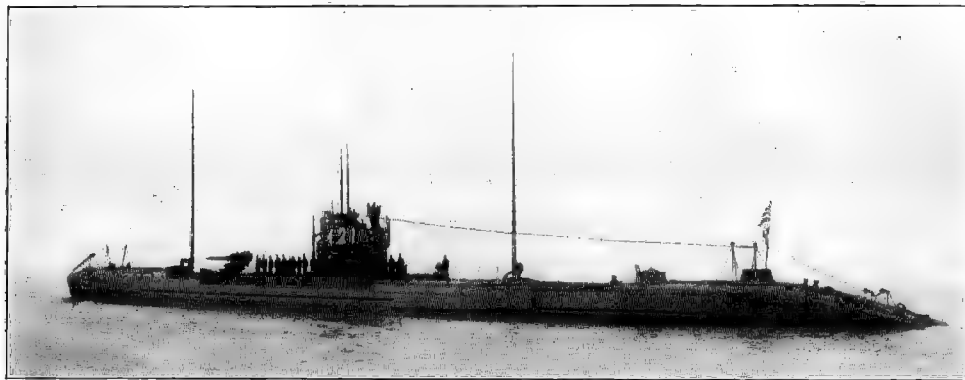
I 51 (ex-44).

Photo added 1927.

First Class Submarines—continued.

2 boats: *I 51* (ex-No. 44, launched at Kure, Nov. 29th, 1921), *I 52* (ex-No. 51, Kure, June, 1922). Both laid down under 1920 Programme as experimental vessels. Displacement: $\frac{1}{2}$ 600 tons. Dimensions: *I 51*, 300 × 28 × 15½ feet. *I 52*, 330 × 25 × 17 feet. Armament: 1—4.7 inch, 1—3 inch AA., 8—21 inch tubes. As originally completed, *I 51* had 4 sets Sulzer Diesels, B.H.P. 5200 and 4 screws, but these have probably been replaced with 2 sets (as found more successful in *I 52*), combined B.H.P. 6000. Designed speed: $\frac{2}{3}$ kts. (not made by *I 51* as originally engined).

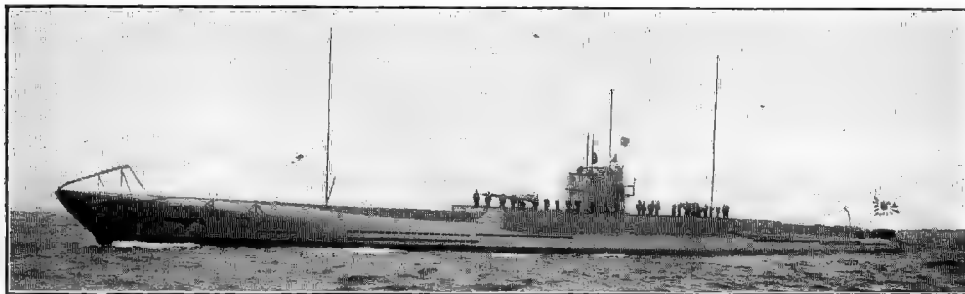
Note.—*I 51* was completed in June, 1924, *I 52* in May, 1925.

4 Kawasaki Boats (Minelayers).

I 21.

1927 Photo, by courtesy of Navy Dept.

4 boats: *I 21* (March 30th, 1926), *I 22* (Nov. 8th, 1926), *I 23* (March, 1927) (ex-Nos. 48—50), *I 24* (Nov. 12th, 1927), all by Kawasaki Co., Kobe, the first probably laid down under 1919 Programme. Displacement: 1480 tons. Dimensions: 280 × 24½ × 14½ feet. Armament: 1—4.7 inch, 1—3 inch AA., 4—21 inch tubes. *I 22* and *I 23* completed at Kure, owing to temporary suspension of business by Kawasaki Yard. Construction of *I 24* is being completed at Kawasaki by Naval Construction Dept. Design believed to be based on German *UB* types.

4 Kawasaki Boats.

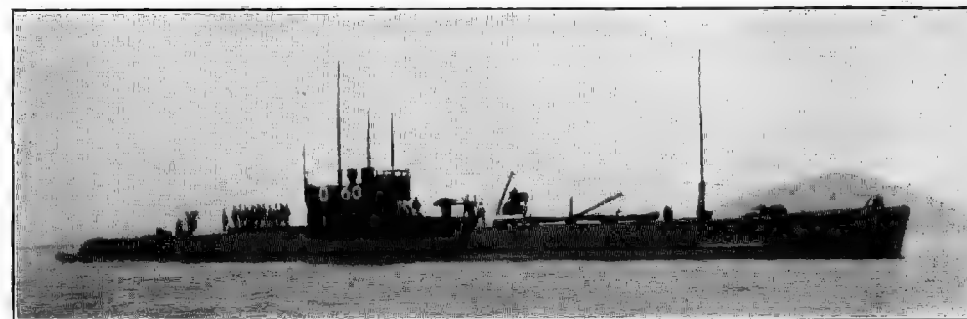
I 1.

1926 Photo, by courtesy of Navy Department.

5 boats: *I 1—3* (ex-Nos. 74—76) (Kawasaki Co., Kobe, 1924-25), *I 4* (May 22nd, 1923), *I 5* (building). Displacement: $\frac{1}{2}$ 700 tons. Dimensions: 320 × 29½ × 16 feet. Guns: 2—4.7 inch. Tubes: 6—21 inch. Design is based in its main features on the ex-German Submarine *O 1* (ex-*U 125*). First three authorised by 1922 Programme. *I 1* launched Oct., 1924, *I 2*, 23/2/1925, *I 3*, 8/6/1925; all completed 1926. *I 1* carried out a test cruise of 2500 miles with complete success. A small seaplane with collapsible wings has recently been carried as an experiment in this class. *I 4*, laid down at Kawasaki, in April, 1926, built under direct superintendence of Naval Construction Department.

Second Class Submarines (from 500 to 1000 tons).

Note.—No more Second Class Submarines are to be built.

9 Mitsu Bishi Type.

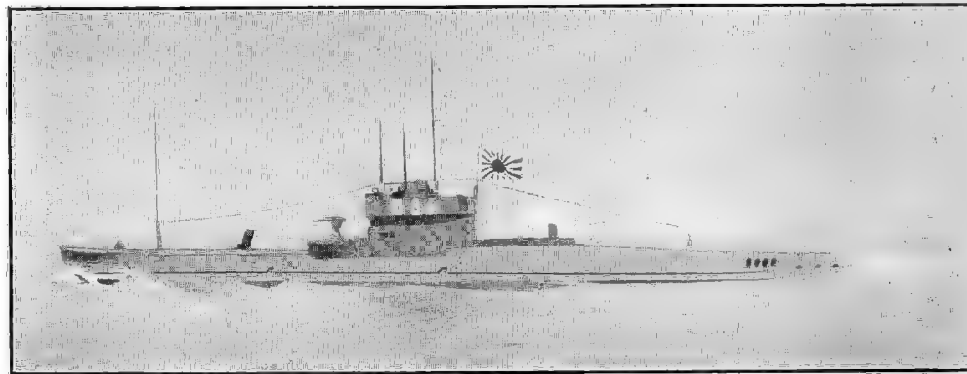
Ro. 60.

Photo added 1926.



Ro. 62.

Photo added 1926.



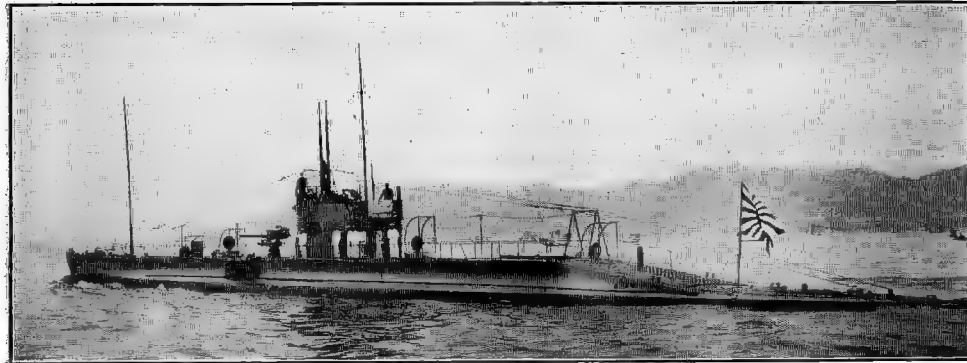
Ro. 64.

1926 Photo, by courtesy of Navy Department.

9 boats: *Ro. 60* (ex-No. 59), *Ro. 61* (ex-No. 72), *Ro. 62* (ex-No. 73), *Ro. 63* (ex-No. 84), *Ro. 64—68* (former numbers, if any, not known). All built by M.B.Z.K., Kobe, 1923-25. Dimensions: 250 (p.p.) × 24 × 13 feet. Guns: 1—3 inch AA., 1 M.G. Torpedo tubes: 6—21 inch. Understood to have 2 sets of 1200 B.H.P. 12-cylinder solid injection Vickers type Diesel engines. Other details as Table.

Notes.—Built under 1920-22 Programmes. Apparently an enlargement of the *Ro. 51—59* type. *Ro. 60* was completed in Oct., 1923, *Ro. 61* in Jan., 1924, *Ro. 62* later in 1924, *Ro. 63* was launched Jan. 24, 1924; *Ro. 68* launched Feb. 23, 1925; *Ro. 65*, Sept. 19, 1925; *Ro. 66*, Oct. 25, 1926; *Ro. 67*, March 18, 1926. *Ro. 63* completed 1924. *Ro. 64*, *Ro. 68*, both 1925; *Ro. 65* completed 1927.

4 Kawasaki Boats (Minelayers).

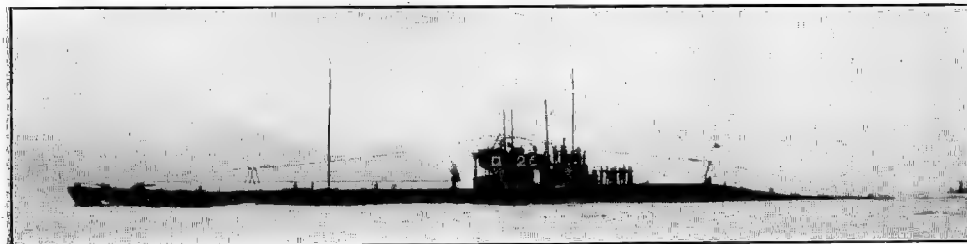


Ro. 29.

1926 Photo, by courtesy of Navy Department.

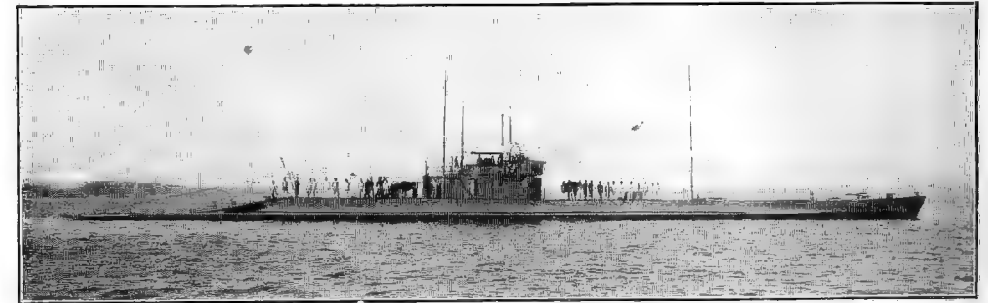
4 boats: **Ro. 29–32** (ex-Nos. 68–71). (Kawasaki Co., Kobe, 1922–23). Dimensions: $243\frac{1}{2}$ (p.p.) \times 20 \times 12 feet. Guns: 1–3 inch A.A., 1–3 pdr. Torpedo tubes: Originally carried 5–21 inch, but are now believed to be fitted as minelayers. Probably have 2 sets of 1300 B.H.P. Fiat Diesel engines. Other details as Table.
Notes.—Built under 1919 Programme, and completed 1923–24. Understood to be a Kawasaki modification of Ro. 16–24 design, with certain improvements. Ro. 29 was completed Oct., 1923; Ro. 31 (ex-No. 70) sank during trials at Kobe, August, 1923, but was salvaged and rebuilt. Ro. 30 and Ro. 32 both completed during 1924–25. Ro. 31 completed at Kure, 1927, owing to financial crisis at Kawasaki Yard.

3 Kaigun Type.



Ro. 26.

Photo added 1926.

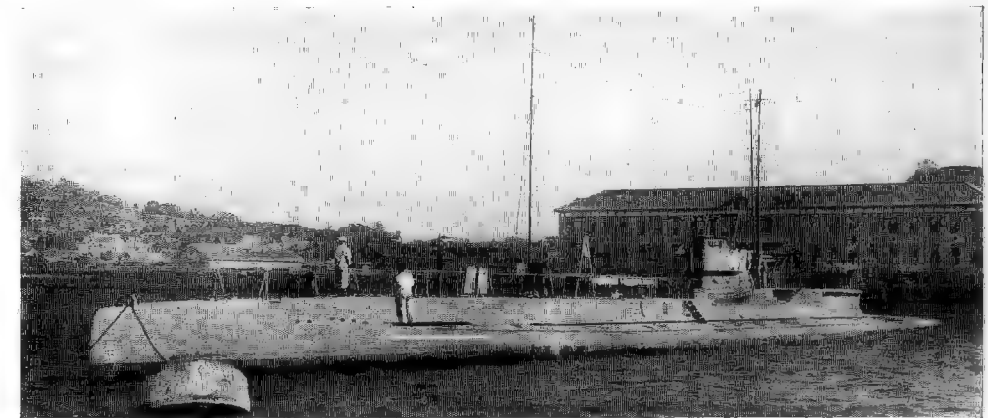


Ro. 26.

1926 Photo, by courtesy of Navy Department, Tokyo.

3 boats: **Ro. 26** (ex-No. 45, Sasebo, 1921), **Ro. 27** (ex-No. 58, Yokosuka, 1922), **Ro. 28** (ex-No. 62, Sasebo, 1922). Dimensions: 230 \times 20 \times 12 feet. Guns: 1–12 pdr., 1–3 pdr. Torpedo tubes 6–21 inch. Ro. 26 reported to have 2 sets of 1300 B.H.P. Sulzer Diesel engines. Other details as Table.
Notes.—Built under 1919 Programme and completed 1922–24. An improvement of the Ro. 16–24 design.

9 Kaigun type.

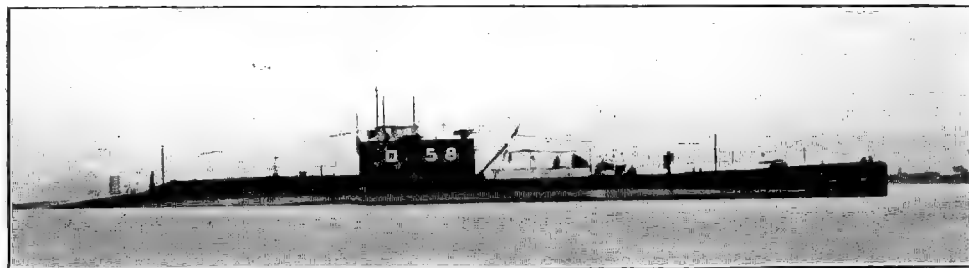


Ro. 24.

1923 Photo, Navy Dept., Tokyo.

9 boats: **Ro. 16** (ex-No. 37) (Kure), **Ro. 17–19** (ex-Nos. 34–36) (Kure), **Ro. 20–23** (ex-Nos. 38–41) (Yokosuka), **Ro. 24** (ex-No. 42) (Sasebo). Dimensions: 230 \times 20 \times 12 feet. Guns: 1–12 pdr. H.A., 1–3 pdr. Torpedo tubes (18 inch): 4 bow and 2 beam. Oil: 75 tons = 11,000 miles endurance at cruising speed on surface. For any other figured details, c. Table. Complement, 44.
Notes.—Built under 1918–19 Naval Programme. Completed 1921–22. Ro. 25 (ex-No. 43), built at Sasebo, foundered in March, 1924, and though salvaged, was so badly strained that she is being utilised for experimental purposes.

9 Mitsubishi—Vickers type.



Ro. 58. (Ro. 57 and 59 same.) (Note absence of step forward.)

Photo added 1926.



Ro. 54.

Photo added 1927.

9 boats: **Ro. 51–56** (ex-Nos. 25–30), **Ro. 57** (ex-No. 46), **Ro. 58** (ex-No. 47), **Ro. 59** (ex-No. 57). (M.B.Z.K. Co., Kobe, 1919–22). Dimensions: $231\frac{1}{2} \times 23\frac{1}{2} \times 13$ feet. Guns: 1—12 pdr. H.A., 1—3 pdr. Torpedo tubes: 6—18 inch in Ro. 51–56; 4—21 inch in Ro. 57–59. Endurance: About 7500 miles on surface. Other details as Table.

Notes.—Gun mounted on extended C.T. in Ro. 57–59. Begun under 1917–18 and 1919 Programmes. Completed 1920–23.

3 Kaigun type. (Modified Laubenf).



Ro. 13.

Photo, Navy Dept., Tokyo.

3 Kaigun type: **Ro. 13** (ex-No. 23, 29th April, 1919), **Ro. 14** (ex-No. 22, 31st March, 1919), **Ro. 15** (ex-No. 24, Oct., 1920). Dimensions: $220 \times 20 \times 12\frac{1}{2}$ feet. Guns: 1—12 pdr., 1—3 pdr. Torpedo tubes: 6—18 inch.

Notes.—Slightly larger than Ro. 11, 12, but of same general design. Kure D.Y. built Ro. 13, builders of other two boats not known. Ro. 14 was to have been ready early in 1921, but completion was delayed at last moment for some reason unknown. Ro. 13 completed 1920; Ro. 15 completed but damaged by fire, July, 1921. These boats were begun under 1917–18 Programmes.



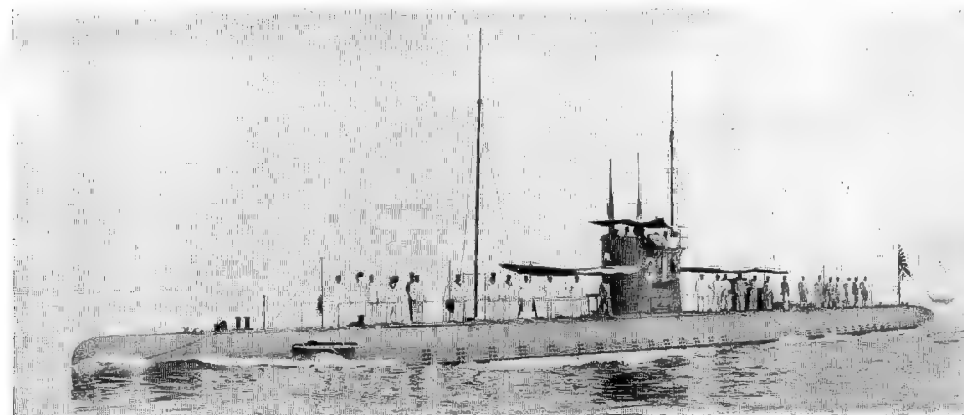
Ro. 11.

1921 Photo, Navy Dept., Tokyo.

2 Kaigun type: **Ro. 11** (ex-No. 19), **Ro. 12** (ex-No. 20) (both launched at Kure, 1917). Dimensions: About $220 (p.p.) \times 21 \times 11\frac{1}{2}$ feet. Guns: 1—12 pdr., 1—3 pdr. Torpedo tubes: 5—18 inch, distributed as two bow, one stern, two revolving on deck, in superstructure before C.T. Oil fuel: 75 tons = 6590 miles at economical speed on surface. Other details as Table A.

Notes.—Both begun April, 1917, completed Sept.-Oct., 1919. Designed for 16 kts. surface speed, but Ro. 11 has not exceeded 15.45 kts. Surface speed for Ro. 12 is fractionally higher. From photograph, this type appears to be a Navy Dept. enlargement of the Schneider-Laubenf double hull design for Ha. 10. Built under 1916–17 Programme.

5 Kawasaki-Laurenti type.



Ro. 3.

1923 Photo, Navy Dept., Tokyo.



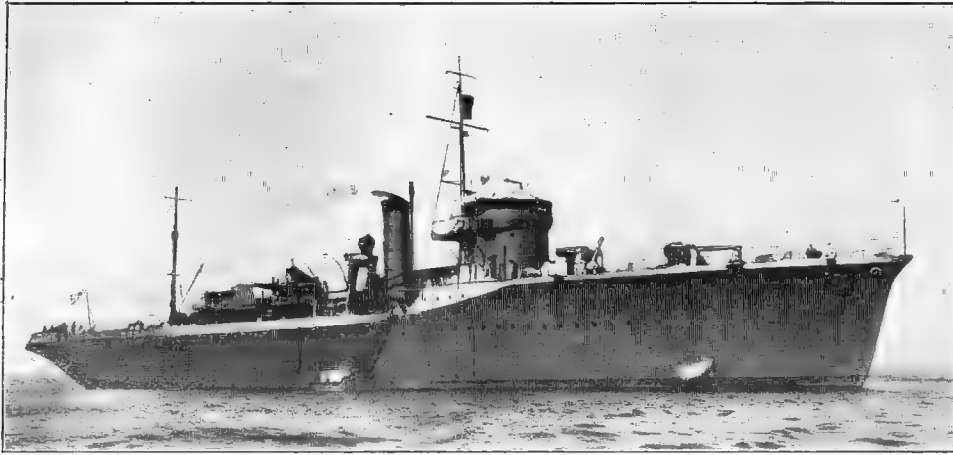
Ro. 2.

1923 Photo, Navy Dept., Tokyo.

5 Kawasaki-Laurenti type: **Ro. 1** (ex-No. 18), **Ro. 2** (ex-No. 21), **Ro. 3** (ex-No. 31), **Ro. 4** (ex-No. 32), **Ro. 5** (ex-No. 33), all launched 1919–21 by Kawasaki Co., Kobe. Displacements: Ro. 1, 2, 689 tons surface, 1072 tons submerged. Ro. 3–5, 700 tons surface, 1092 tons submerged. Dimensions: $215\frac{1}{2}$ (Ro. 1, 2) $218\frac{1}{2}$ (Ro. 3–5) $\times 20 \times 13\frac{1}{2}$ feet. Guns: 1—12 pdr., 1—3 pdr. Torpedo tubes: 5—18 inch (4 bow, 1 stern). Machinery: Believed to have F.I.A.T.-San Giorgio Diesel engines. Endurance: About 3000 miles on surface.

Notes.—Ro. 1 belongs to the 1915–16 Programme, Ro. 2 to the 1916–17 Programme, and Ro. 3–5 to the 1918–19 Programme. Completed 1919–1922.

Anti-Submarine Net Layers.



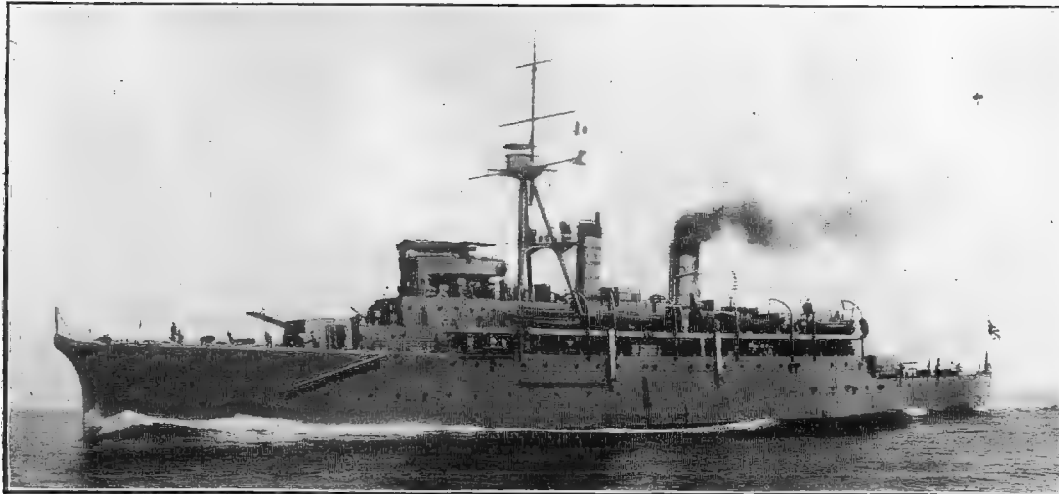
SHIRATAKA.

1929 Photo.

SHIRATAKA (Ishikawajima Co., Tokyo, 25th January, 1929). Displacement : 1345 tons *standard* : 1405 tons *normal*. Dimensions : 260 × 38 × 9 feet. Guns : 3—4.7 inch A.A., 1 M.G. Machinery : 2 sets triple expansion. Boilers : 2 Kampon. Speed, 16 kts.

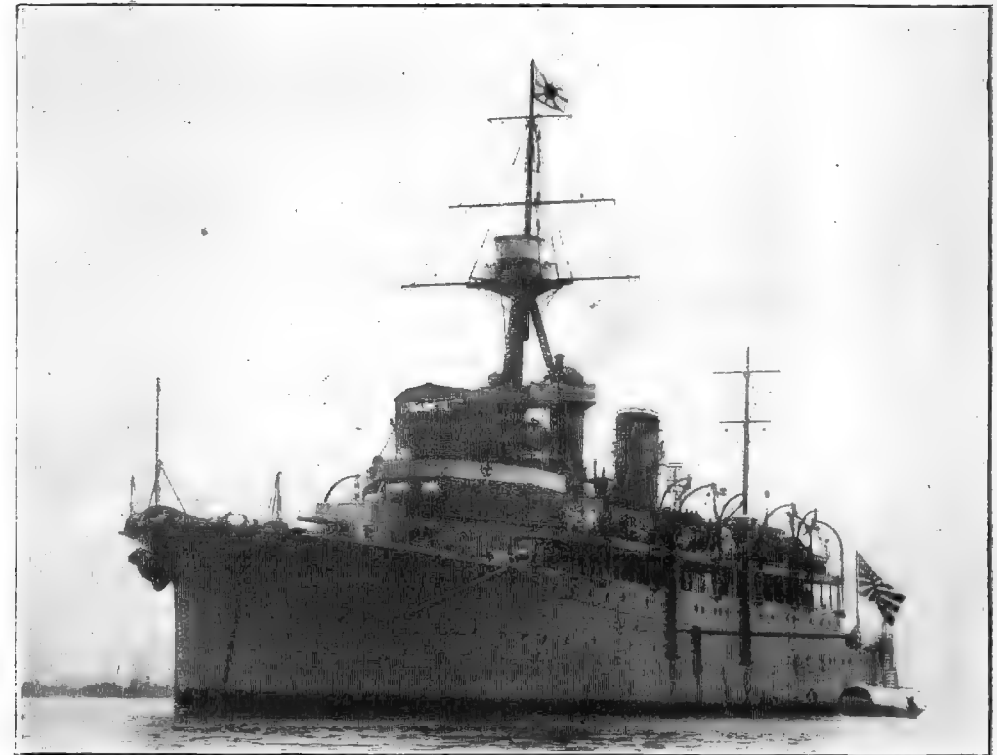
KAMOME (Osaka Ironworks, 27th April, 1929), **TSUBAME** (Yokohama Dock Co., 24th April, 1929). Displacement : 450 tons *standard*, 570 tons *normal*. Dimensions : 206½ × 23½ × 6½ feet. Guns : 1—3 inch. Speed : 19 kts.

Notes.—*Shirataka* laid down 24th November, 1927 ; other two in 1928. Meanings of these three names are as follows : *Shirataka*—White Hawk. *Kamome*—Seagull. *Tsubame*—Swallow.

Submarine Depot Ships (*Sensui Kan Botai*).

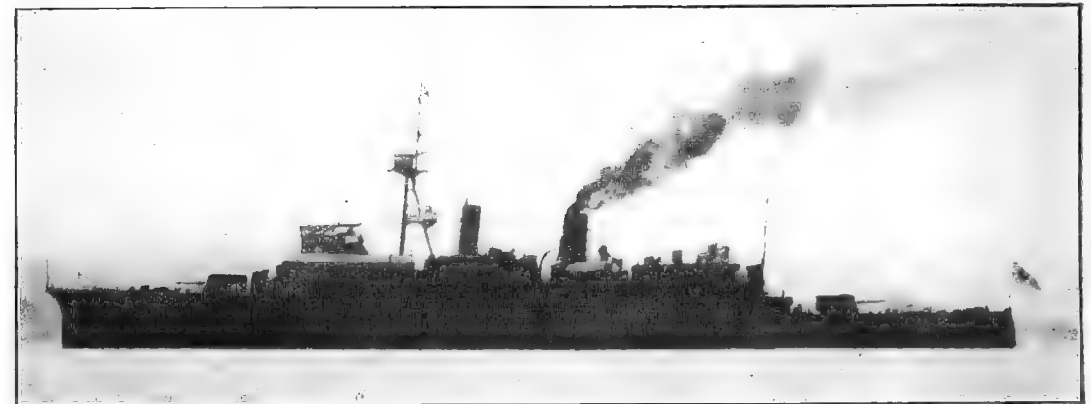
JINGEI.

1924 Photo, by courtesy of the Navy Department.



JINGEI.

1928 Photo.



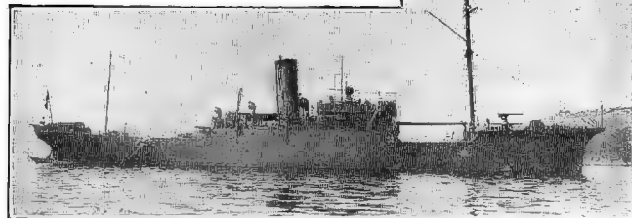
CHOGEI.

Photo added 1926.

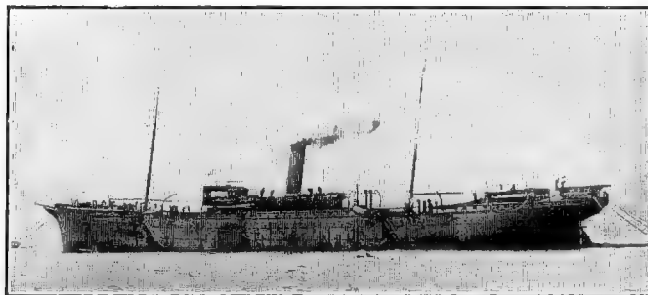
JINGEI (May, 1923), **CHOGEI** (24th March, 1924). Both by Mitsu Bishi Co., Nagasaki. 8500 tons. Dimensions : 380 × 53½ × 19½ feet. Turbine engines. 2 screws. *Jingei*, 6 Kampon boilers ; *Chogei*, 5. H.P. = 16 kts. Guns : 4—5.5 inch, 2 M.G. 2 searchlights.

Destroyer Depot Ships

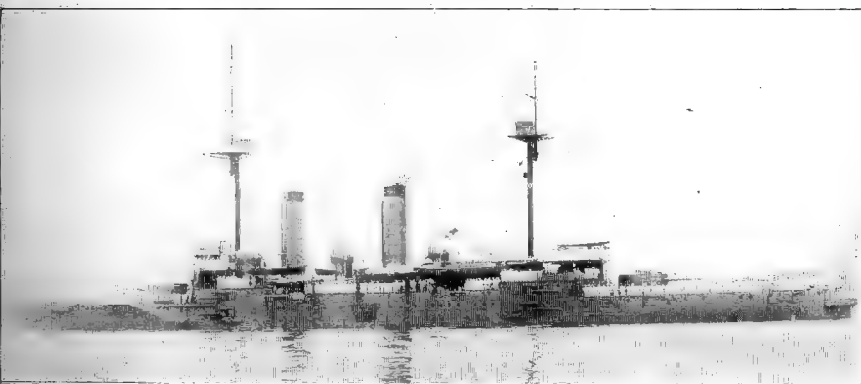
(Sui rai Boku).



1917 Photo, by courtesy of the Navy Department, Tokyo.
KOMAHASHI. (Sasebo, 1913). 1230 tons. $227 \times 35 \times 17\frac{1}{2}$ feet. Guns: 2—12 pdr., 1—3 inch AA. H.P. 1824 = 13.9 kts. Was originally built as a Naval Transport.



KARASAKI (ex *Ekaterinoslav*, 1896, captured 1904). 6,170 tons. Dimensions: $440 \times 49\frac{1}{2} \times 15\frac{3}{4}$ feet (max. draught). Armament: 1—12 pdr., 1—3 inch AA., 1—3 pdr. H.P. 3200 = 13 kts.



TOKIWA

1929 Photo.

Mine Layers, 1st Class (*Fusetsu Kan*).

ITSUKUSHIMA (May 22nd 1929). Laid down at Uraga Dock Company's Yard, early in 1928. Displacement: 2020 tons normal, 1970 tons standard. Dimensions: $328 \times 42 \times 10$ feet. Guns: 3—5.5 inch, 2—3 inch A.A. Speed, 17 kts. A second vessel of slightly different type was laid down in 1929.

Note.—Some of the more recently built submarines are fitted for minelaying.



1920 Photo, Navy Dept., Tokyo.

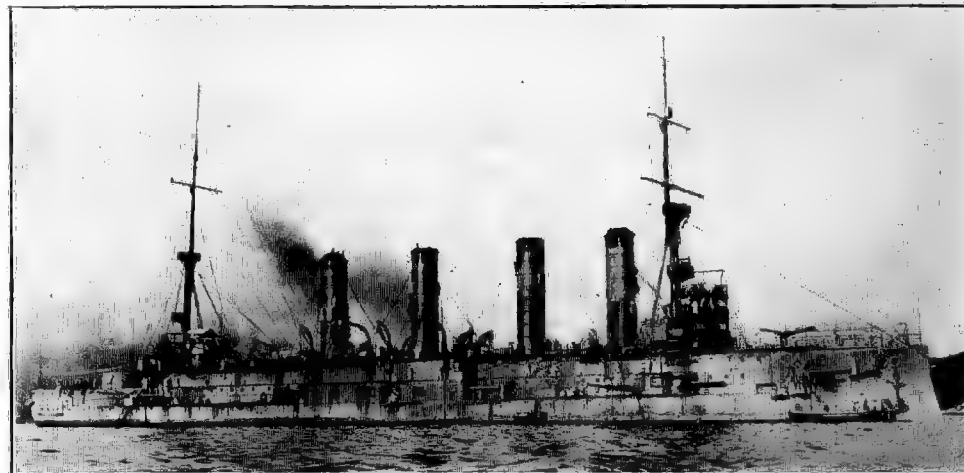
KATSURIKI. (Kure D.Y., Oct., 1916). 2000 tons. Dimensions: $260 \times 39 \times 14$ feet. Guns: 3—4.7 inch. H.P. = 13 kts. Built under 1915-16 Programme. Fitted with 4 gallows for sweeps. Reported to carry 150 mines. First period expired 1925.

TOKIWA (Armstrong, July, 1898). 9700 tons. Dimensions: $442 \times 67\frac{1}{2} \times 24\frac{1}{2}$ feet. Guns: (originally) 4—8 inch, 40 cal., 14—6 inch, 40 cal., 10—3 inch, 1—3 inch AA., 3—2½ pdr. (Some of 6 inch believed to have been removed). All other particulars as Cruiser *Asama* (of which she was originally a sister) on an earlier page. Third period expired 1923.

Note:—*Tokiwa* means Evergreen. (Photo in 1st column.)

アサ

ASO (ex-Russian *Bayan*). (La Seyne, 1900). Displacement, 7800 tons. Complement, 791. Length (*w.l.*), 443 feet. Beam, $57\frac{1}{2}$ feet. Max. draught, 22 feet. Length *over all*, 450 feet. Guns: 8—6 inch, 45 cal., 14—3 inch, 1—3 inch AA., 2—2½ pdr., 5 S.L. Torpedo tubes (at 20° abaft); 2 submerged. Tubes are 15 inch. Armour (Krupp): 8" Belt (amidships), 4" Belt (forward), 8" Bulkhead (aft), 2" Deck, $3\frac{1}{2}$ "— $2\frac{1}{2}$ " Upper belt, 7" Big gun turrets, Hoists, &c., $3\frac{1}{4}$ " Battery redoubts, $6\frac{1}{2}$ " Conning tower. (Total about 1500 tons.) Machinery: 2 sets vertical triple expansion. 2 screws. Boilers: 26 Belleville. Designed H.P. 16,500 = 21 kts. Coal: normal 550 tons; maximum 1100 tons. Scuttled at Port Arthur, 1905, and captured on fall of fortress. Re-floated and re-fitted in Japan, 1905-6; converted from cruiser, 1920. Number of mines carried 420. Third period expired 1925.

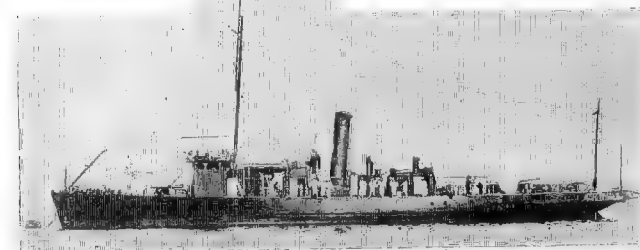


ASO.

Mine Layers, 2nd Class (*Fusetsu lei*).

KUROKAMI

1919 Photo, Navy Dept., Tokyo.



(KUROKAMI CLASS—12 SHIPS.)

KUROSUKI. Built at Yokosuka D.Y. under — Programme.

NINOSHIMA. Built at Kure D.Y. 1918-19 Programme.

YENOSHIMA.* Built under 1917 Special Programme, at Maidzuru D.Y.

YENTO* (Mar., 1917), **KATASHIMA** (Feb., 1917), both built at Maidzuru D.Y., and **KUROKAMI** (Kure D.Y., Feb., 1917). Built under 1916-17 Programme.

ASHIZAKI and **KATOKU.** Both launched at Maidzuru D.Y., Oct., 1915. Built under 1915-16 Programme.

KUROSHIMA (Oct., 1914) and **TOSHIMA** (Oct., 1914). Both built at Sasebo D.Y.

SOKUTEN (March, 1913). Built by Maidzuru D.Y.

NATSUSHIMA (Yokosuka D.Y., March, 1911).

Details of all above ships: 430 tons. Dimensions: $150 \times 25 \times 7.5$ feet. Guns: Not known. H.P. 600 = 12 kts.

Unofficially reported to carry 40-50 mines each.

*May also be referred to as *Enoshima* and *Ento*.

1928 Official Photo.

SPECIAL SERVICE SHIPS.

Note.

All Vessels listed on this page are officially rated as Naval Store-ships and Transports (*Unsokan*), and are grouped with various other auxiliaries under the general classification of "Special Service Ships." (*Tokumukan*).

Oilers & Tank Vessels.*

*This is not an official Rating. These ships are included in the general classification of "Naval Transports and Storeships (*Unsokan*)."

NOTORO CLASS—10 SHIPS.



SHIRIYA.

Photo added 1927.



NOTORO as Aircraft Tender.

Photo added 1928.

IRO, SHIRIYA, TSURUMI, NARUTO, HAYATOMO, ONDO, SATA, ERIMO, NOTORO and SHIRETOKO.
Displacement: 15,243—15,450 tons. (8000 tons gross.) Dimensions: 470½ (o.a.), 455 (p.p.) × 58 × 26½ feet. Guns: 2—5.5 inch, 2—3 inch A.A. Reciprocating engines. 4 cylindrical boilers, (except *Naruto*, 6 Miyabara). I.H.P. 3,750=12 kts. Fuel: 8000 tons oil as cargo and 1000 tons oil for own bunkers. Complement, 155—157.

Name.	Builder.	Begun.	Launch.	Comp.
<i>Erino</i> ..	Kawasaki Co., Kobe.	3/5/20	28/10/20	16/12/20
<i>Notoro</i> ..		24/11/19	8/5/20	10/8/20
<i>Shiretoko</i> ..		16/2/20	17/7/20	8/9/20
<i>Ondo</i> ..	Osaka I.W.	1922	1922	1923
<i>Iro</i> ..		1922	5/8/22	1923
<i>Tsurumi</i> ..		1921	29/9/21	1922
<i>Sata</i> ..	Yokohama Dock Co.	1920	28/10/20	1921
<i>Shiriya</i> ..		7/3/21	12/11/21	1922
<i>Hayatomo</i> ..		1922	1923	1923
<i>Naruto</i> ..	Kure D.Y. Yokosuka D.Y.	3/22	1/23	10/24

Oilers and Tank Vessels—continued.



1920 Photo, Navy Dept., Tokyo.

SUNOSAKI (Yokosuka D.Y., June, 1918). 9800 tons. Dimensions: 400 × 50 × 25.2 feet. Guns: 2—4.7 inch, 2—12 pdr. H.P. 6000 = 14 kts. Carries 5000 tons oil. Built under 1916-17 Programme.



1920 Photo, Navy Dept., Tokyo.

TSURUGIZAKI (Kure D.Y., June, 1917). 1970 tons. 220½ × 31 × 14 feet. H.P. 900 = 9 kts. Guns: 2—12 pdr. Cargo: 1,100 tons oil. Built under 1916-17 Programme.

Fleet Supply Ship.



MAMIYA.

Photo added 1926.

MAMIYA (Kawasaki Co., Kobe, 1923). Displacement: 17,500 tons. Dimensions: 475 × 61 × 28 feet. Guns: 2—4.7 inch, 2—3 inch A.A. Triple expansion engines. 8 Kampon boilers. H.P. 7000 = 14 kts. Complement, 195.

Special Service Ships—JAPAN

Fleet Colliers.*



MUKOTO.

1920 Photo, Navy Dept., Tokyo.

NOSHIMA (Feb., 1919), **MUKOTO** (Oct., 1918). Both built by Mitsubishi Co., Kobe. 8750 tons. Dimensions: 345 × 50 × 23.9 feet. Guns: 2—4.7 inch, 2—3 inch A.A. H.P. 2640 = 12.5 kts. Coal: 877 tons. Built under Special 1918-19 Programme.

*Officially rated as "Naval Storeships or Transports (*Unsokan*)."

Oil Tanker & Fleet Collier.



KAMOI.

Photo added 1927.

KAMOI (New York S.B. Co., completed 12th Sept., 1922). Authorized under 1920-21 Naval Programme, and laid down 23rd Sept., 1921. Displacement: 19,550 tons (10,222 tons gross.) Dimensions: 495 (w.l.), 478½ (p.p.) × 67½ × 28 feet. Guns: 2—4.7 inch, 2—3 inch A.A. S.H.P. 8000 = 15 kts. Machinery: G.E. (Curtis) turbines and electric drive. Boilers: 4 Yarrow. Fuel: Own Bunkers 2500 tons coal: Cargo 2000 tons coal and 7500 tons oil fuel, or about 10,000 tons oil if no coal carried.

JAPAN—Special Service Ships.

Naval Storeships or Transports (*Unsohan*).



1920 Photo, Navy Dept., Tokyo.

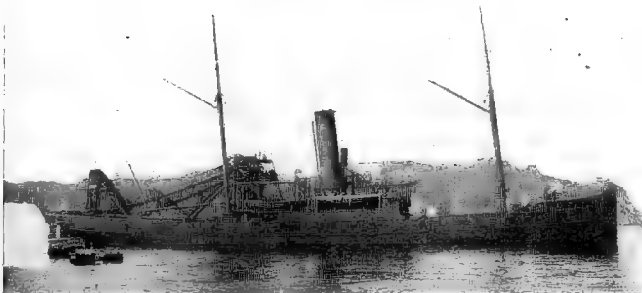
SEITŌ (ex-*Tsingtao Maru*, ex-German S.S. *Durendart*, built at Flensburg, 1906, and captured 1914). 3844 tons gross. Dimensions: $240 \times 49.2 \times 21\frac{3}{4}$ feet. Guns: 2—12 pdr. H.P. 1525 = 9 kts.



1920 Photo, Navy Dept., Tokyo.

TAKASAKI (1902). 4746 tons. Dimensions: $375 \times 47.9 \times 15\frac{3}{4}$ feet. Guns: 2—12 pdrs. Speed: 10 kts. No other details known.

Salvage Vessel.



KURIHASHI (ex *Herakles*, purchased from Swedish owners about 1909). 1040 tons. $182 \times 30\frac{1}{4} \times 11\frac{3}{4}$ feet. I.H.P. 1200 = 12.5 kts. Fitted with powerful steam pumps and derricks.

This name means "Chestnut Bridge."

SPECIAL SERVICE SHIPS.

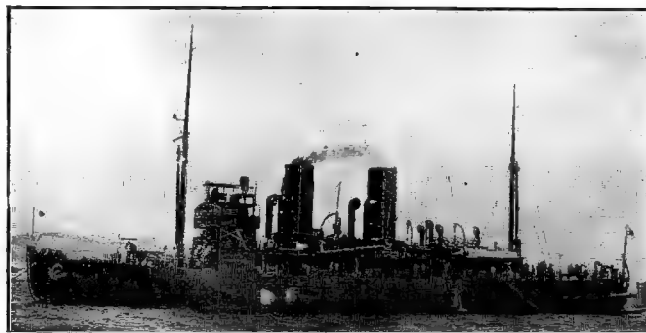
Training Ships.

For Engineer Branch: { **YURAGAWA**. No details known.
NIKOGAWA. No details known.

For Cadets: **IWATE**, Cruiser. For Midshipmen: Cruisers **IDZUMO**, **YAKUMO**.

For Seamen, Stokers and Boys (but not respectively): Disarmed battleships **FUJI** and **SHIKISHIMA**.

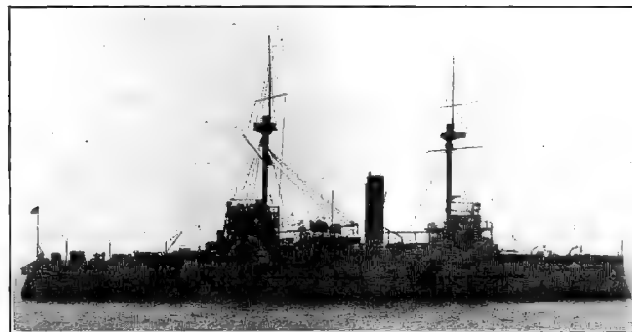
Ice Breaker.



OTOMARI. Photo added 1925 by courtesy of the Ministry of Marine.

OTOMARI (Kawasaki Co., October, 1921). 2700 tons. $200 \times 50 \times 18\frac{1}{2}$ feet. Guns: 1—4.7 inch. Reciprocating engines. 5 cylindrical boilers. Speed: 13 kts.

Submarine Salvage Vessel and Repair Ship.



1929 Photo.

***ASAHI** (March, 1899). Ex-battleship of 14,765 tons original displacement, rendered non-effective and converted for present use. Dimensions: $425\frac{1}{4} (o.a.) \times 75\frac{1}{4} \times 27\frac{1}{4}$ feet.

Machinery: 2 sets vertical triple expansion. 2 screws. 4 cylindrical boilers (replacing original Bellevilles). Present speed 12 kts. The name of this ship means "Rising Sun."

Aircraft Tender.



1928 Photo, by courtesy of the Navy Department.

WAKAMIYA (1901). 7600 tons. Dimensions: $365 \times 48\frac{1}{4} \times 19$ feet. Armament: 2—12 pdr. H.P. 1600 = $9\frac{1}{2}$ kts. Carries 10 seaplanes. Was originally built as a Naval Transport.

Note—Oiler *Notoro*, illustrated elsewhere, has been temporarily employed as an Aircraft Tender.

Surveying Vessels.



1920 Photo, Navy Dept., Tokyo.

KOSHŪ (ex-German S.S. *Michael Jebsen*, built by Howaldt, Kiel, 1904, and captured 1914). 1521 tons gross. Dimensions: $251.1 \times 36.1 \times 18.9$ feet (depth of hold). Guns: 2—12 pdr. H.P. 800 = 9.5 kts. Ice-breaking stem.



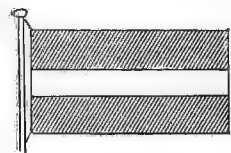
Now has fore topmast.

MANSHU (ex-*Manchuria*, 1901). 3916 tons. Complement, 193. Guns: 2—12 pdr. I.H.P. 5000 = 17.6 kts. Coal: 400 tons.

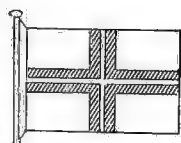
Note.—The above ship is officially rated as a Second Class Coast Defence Vessel.

LATVIAN NAVY.

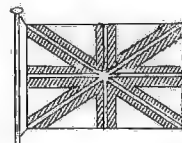
Flags.



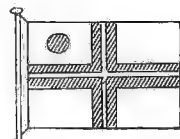
MERCANTILE.



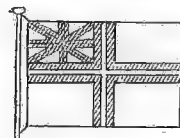
ENSIGN.



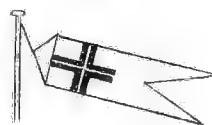
JACK.



ADMIRAL.



COMMANDER-IN-CHIEF
OF FORCES.



CAPTAIN IN CHARGE OF
A DIVISION.

Colour of Ships: Light grey.

Personnel: About 450 permanent + 200 yearly conscripts.

Minister of War: Colonel R. Baugerski.

Commanding Officer, Naval Forces: Rear-Admiral Count A. Keyserling.

Naval Uniforms.



Admiral



Captain



Commander (Lett. = Captain)



Lt. Commander (Lett. = Lt. Captain)



Lieutenant



Sub-Lieutenant

Note.—Admiral's top stripe should be thinner than shown above.

Mercantile Marine.

(From Lloyd's Register, 1929 figures.)

Total gross tonnage: 150,159.

2 Submarines.



RONIS.

1927 Photo, A. & Ch. de la Loire (Builders).

2 Loire-Simond type: **Ronis** (At. & Ch. de la Loire, Nantes, July 1st, 1926), **Spidola** (Ch. & At. Augustin Normand, Havre, Oct. 6th, 1926). Displacement: 322 tons. Dimensions: 180½ × 15 × 10 feet. Armament: 1—3 inch AA., 3 M.G., 6—17.7 inch tubes (2 fixed bow, other 4 in revolving twin mounts). Machinery: 2 sets Sulzer Diesels. HP. 1,300. Speed: 14½ kts. Oil Fuel: 19 tons. Radius: 18½ miles at 10 kts. Diving limit: 28 fathoms. Complement, 34.

1 Gunboat.

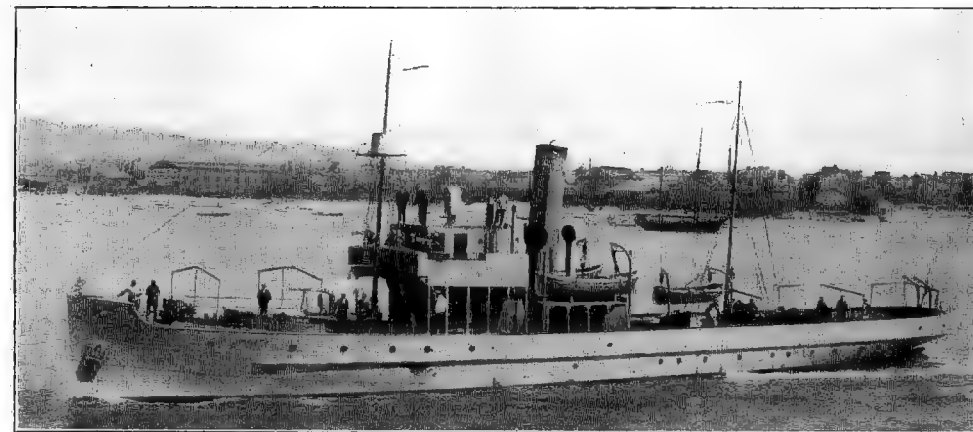
LATVIA



1926 Official Photo.

VIRSAITIS (ex-German Minesweeper M 68, Neptun Werft, Rostock, 1917). Reconstructed at Riga, 1921-22, after being sunk during War. Displacement: 525 tons. Dimensions: 182 (w.l.) × 23½ × 7 feet. Guns: 2—2.9 inch (Canet), 1—2 pdr. AA., 2 M.G. 1 S.L. H.P. 1600 = 17 kts. Coal: 120 tons. Complement, 69.

2 Minesweepers.



IMANTA.

1927 Photo, Messrs. Normand (Builders).

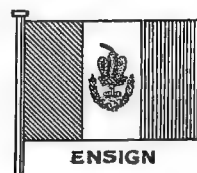
VIESTURS (Chantiers Dubigeon, Nantes, May 27th, 1926), **IMANTA** (Normand, Havre, Aug. 11th, 1926). Displacement: 255 tons. Dimensions: 160 × 21 × 5 feet. Guns: 1—3 inch AA., 4 M.G. Provision for 30 mines. Machinery: 2 sets triple expansion. H.P. 750 = 14 kts. Fuel: 30 tons. Complement, 39.

Note.—These two vessels were designed for the Latvian Navy by Ch. & At. Augustin Normand.

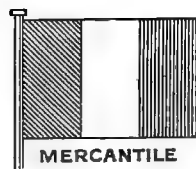
Surveying Vessel.

HIDROGRAFS (ex-Weichsel, J. W. Klavitter, Danzig, 1918). 285 tons gross. Dimensions: 126½ × 23½ × 13½ feet. Triple expansion engines. Speed: 10 kts.

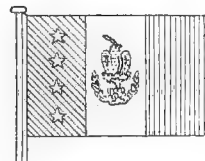
MEXICO.



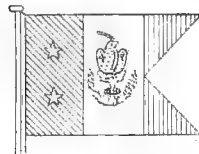
ENSIGN



MERCANTILE



SECRETARY OF WAR AND
NAVY DEPTS.



OFFICER COMMANDING
A DIVISION.

Minister of War and Marine: General Joaquin Amaro.

Docks.

At Vera Cruz (Atlantic Coast), Government floating dock, 262 × 46 × 18 feet (1600 tons).

At Salina Cruz (Pacific Coast), Government dry dock, 664 × 79½ × 35½ feet (leased to Tehuantepec National Railway Co).

Mercantile Marine.

(From Lloyd's Register, 1929 figures), 53,883 tons gross.

RECOGNITION SILHOUETTES.

Scale: 1 inch = 80 feet.



MAYO.
YAQUI.

Scale: 1 inch = 160 feet.



A. PRIETA

(Has no fore topmast at present.)



ANAHUAC.



N. BRAVO.

MEXICAN FLEET.

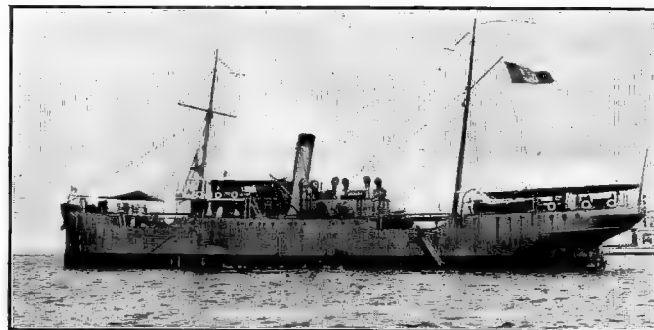
(Revised by courtesy of the Secretary of the War and Navy Depts., 1927.)

Coast Defence Vessel (classed as *Crucero*.)

(Appearance similar to *Floriano* in Brazilian Navy.)

ANAHUAC (ex-*Deodoro*, ex-*Xpiranga*, purchased from Brazil, 1924). Built at La Seyne, 1898. Displacement: 3162 tons. Complement, 200. Length (p.p.) 267½ feet. Beam, 48 feet. Max. draught, 13½ feet. Guns: 2—9.4 inch, 45 cal.; 4—4.7 inch, 50 cal. Armour (Harvey-nickel: 13½" Belt (amidships), 4" Belt (ends), 1½" Deck (reinforcing belt), 8" Turrets, 3" Casemates, 5" Conning tower. Machinery: 2 sets triple expansion. 2 screws. Boilers: Babcock (converted to burn oil). Designed H.P. 3400 = 15 kts. Oil fuel: 440 tons. Gunnery control: A few voice pipes only.

Armed Transport (*Transporte*).



1925 Photo, by courtesy of Captain Julio Morales Coello, C.N.

PROGRESO (Odero, 1907). 1590 tons. Dimensions: 230 × 36½ × 11 feet. Guns: 4—6 pdr. H.P. 1400 = 13 kts. Coal: 209 tons.

2 Gunboats (*Cañoneros*).



NICOLAS BRAVO (Odero, 1903). 1227 tons. Dimensions: 242 × 34 × 9½ feet. Guns: 2—4 inch, 4—6 pdr. H.P. 3000 = 12.25 kts. 2 screws. Oil fuel: 226 tons. Complement, 130.

Gunboats—continued.

Photo wanted.

AQUA PRIETA (ex *U.S.S. Machias*, Bath I.W., 1891). Purchased 1921. 1293 tons. Dimensions: 204 × 32 × 12½ feet. Guns: 6—4 inch, 2—6 pdr. H.P. 1800 = 15.5 kts. Coal: 285 tons. Complement, 157.

Note.—*Zaragoza* has been condemned as non-effective, and is no longer in service.

8 Patrol Vessels (*Guardacostas*).

MAYO (ex *U.S. S.C.38*, 1917) and **YAQUI** (ex *U.S. S.C.*, 1917). 77 tons. Dimensions: 105 × 14½ × 6½ feet. Guns: 1—3 inch, 23 cal. Engines: 3 sets Standard motors. B.H.P. 660 = 18 kts. nominally. Fuel: 3,000 gallons petrol.

TAMPICO, COVARRUBIAS, MAZATLAN, GUAYMAS, ACAPULCO (ex-*Salinas*), **VERA CRUZ**. All are ex-trawlers purchased in Canada 1920. Built 1918. 486 tons. Dimensions: 133 × 24 × 13½ feet. Guns: 1—6 pdr., 2 M.G. I.H.P. 557 = 8 kts. Coal: 208 tons.

9 Vessels under control of Free Ports Department.

BOLIVAR (ex-*Floraba*), **WASHINGTON** (ex-*Gonzaba*). Both built 1920 by Dominion S.B. Co., Toronto. 1655 and 1670 tons gross.

MOCTEZUMA (ex-*Lake Fisher*) (Globe S.B. Co., Superior, Wis., 1919). 2713 tons gross.

COAHUILA, JALISCO (Cramps, Philadelphia, 1916). 2585 tons gross.

MEXICO (Hamilton, Port Glasgow, 1913). 2548 tons gross.

TABASCO, TAMAULIPAS (McMillan, Dundee, 1901). 1022 tons gross.

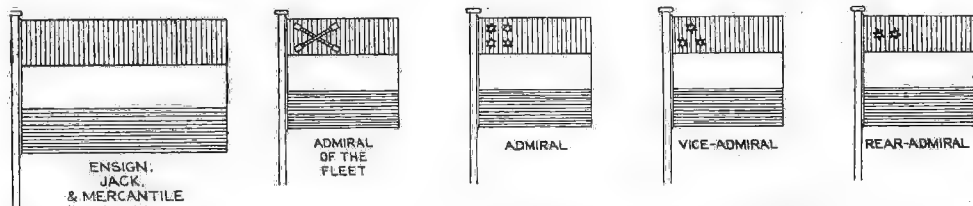
TEHUANTEPEC (McMillan, Dundee, 1896). 751 tons gross.

Note.—Above ships are available for transport service when required.

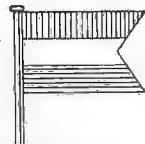
ROYAL NETHERLANDS NAVY.

NETHERLANDS

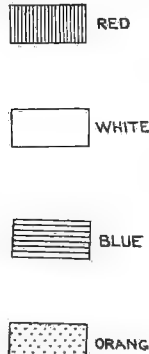
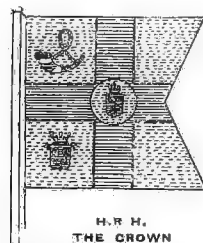
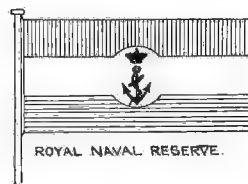
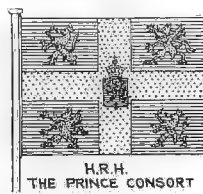
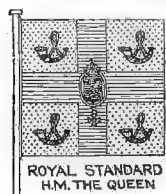
Revised 1929, by courtesy of the Chief of the Naval Staff, Ministry of Marine, The Hague.



CAPTAIN COMMANDING DIVISION FLIES THIS FROM THE MASTHEAD
SENIOR NAVAL OFFICER FLIES THE SAME FROM SIGNAL YARD.



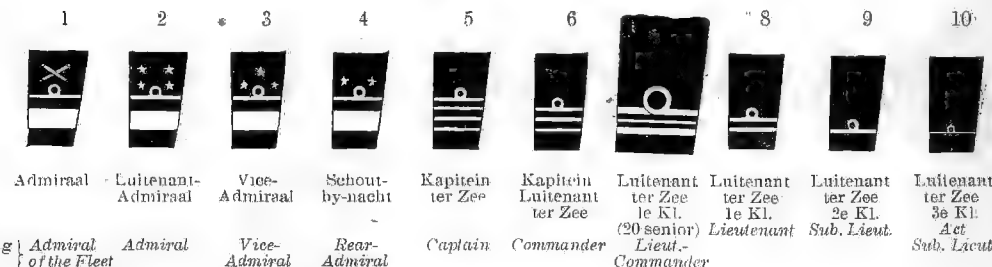
Officers commanding Flotillas fly a yellow pendant with black letter D in centre, from signal yard.



Notes to Flags.

Royal Standard
H.R.H. The Prince Consort } Colours of these are royal blue and dark orange.
Governors of Colonies — As ensign, but with following distinguishing marks on red stripe near staff; Governors of Suriname and of Curaçoa: Three white balls.

Netherlands Uniforms.



Corresponding to British: Admiral of the Fleet, Admiral, Vice-Admiral, Rear-Admiral, Captain, Commander.
In relative ranks—
Doctors have insignia 4 to 8 without the curl.
Paymasters " 5 to 10 " in silver.
Engineers " 5 to 10 with the curl, and are to be distinguished by the badge of a torch crossed by two arrows on the collar, instead of the usual anchor.

The broad stripes in ranks 1—4 are 2 inches wide (5 c/m); 5—8, $\frac{3}{4}$ inch (1 c/m); No. 9, $\frac{1}{2}$ inch. Distance between stripes is $\frac{1}{4}$ inch (5 m/m).
Flying Officers are of ranks 9 and 10, and are to be distinguished by the badge of an aeroplane propeller on collar instead of the usual anchor.
R.N. Reserve Officers are of ranks 6, 8, 9 and 10.

Naval Guns (Krupp and Bofors Models). (Officially revised, 1929.)

Notation.	Calibre.		Official Mark.	Long.	Weight of Gun.	Weight of Shell.	Initial Velocity.	Max. penetration with A. P. capped against K. O.		
	in.	c/m.						8000 in.	5000 in.	3000 in.
HEAVY	11	28		42 $\frac{1}{2}$	31	595	2920	8	13	15 $\frac{1}{2}$
	9.4	24	"No. 2"	40	24 $\frac{1}{2}$	375	2788	3 $\frac{1}{2}$	7 $\frac{1}{2}$	10 $\frac{1}{2}$
	9.4	24	"No. 1"	40	24 $\frac{1}{2}$	375	2690	4	8 $\frac{1}{2}$	10 $\frac{3}{4}$
MEDIUM	5.9	15	"Nos. 6 & 7"	50	5 $\frac{3}{8}$	101 $\frac{1}{2}$	3084	—	—	—
	5.9	15	"No. 5"	40	5	90 $\frac{1}{2}$	2788	—	—	—
	5.9	15	"No. 4"	40	4 $\frac{3}{4}$	90 $\frac{1}{2}$	2444	—	—	—
	5.9	15	"No. 2"	40	4 $\frac{1}{4}$	100	2231	—	—	—
	5.9	15	"No. 1"	35	4	100	2133	—	—	—
	4.7	12	"Nos. 4 & 5"	50	4	53	2950	—	—	—
	4.7	12	"No. 3"	40	2	52 $\frac{1}{2}$	2231	—	—	—
	4.7	12	"No. 2"	40	2	52 $\frac{1}{2}$	2231	—	—	—
	4.7	12	"No. 1"	40	2	52 $\frac{1}{2}$	2231	—	—	—
	4.1	10.5	Semi Aut.	50	—	39 $\frac{3}{8}$	2897	—	—	—
LIGHT	3.5	8.8	"Nos. 1 & 2"	45	—	22	2625	—	—	—
	3.0	7.5	"Nos. 6, 7 & 8"	50	—	13	2936	—	—	—
	3.0	7.5	"No. 5"	18	—	13	1148	—	—	—
	3.0	7.5	"No. 4"	30	—	13	2034	—	—	—
	3.0	7.5	"No. 3"	40	—	13	2231	—	—	—
	3.0	7.5	"No. 2"	40	—	13		—	—	—
	3.0	7.5	"No. 1"	40	—	13		—	—	—
	3.0	7.5	Semi Aut. 4	55	—	13	2936	—	—	—
	3.0	7.5	" 3	55	—	13	2936	—	—	—
	3.0	7.5	" 2	55	—	13	2936	—	—	—
	3.0	7.5	" 1	55	—	13	2936	—	—	—
	2.0	5.0	"No. 2"	40	—	3.9	2231	—	—	—
	2.0	5.0	"No. 1"	40	—	3.9	2231	—	—	—
	2.0	5.0	Semi Aut.	55	—	3.9	2936	—	—	—
	1.5	3.7	"	30	—	1.0	1358	—	—	—

Notes

All displacements are given in metric tons. Regarding the two sets of figures given for complements on later pages, (H) denotes complement when serving in home or European waters; (A) denotes complement when serving in Dutch East Indies or abroad.

Personnel: About 7,500 all ranks, navy and marine infantry (enlisted men). Reserves about 5,000.

Oversea Possessions: Dutch East Indies (Sumatra, Java, Borneo, etc.); Dutch Guiana (Suriname) Curaçoa, Bonaire, Aruba, Saba, etc.

Minister of Defence: Dr. L. N. Deckers. Chief of the Naval Staff: Rear-Admiral J. C. Jager.

Colour of Ships: Grey to green, except Submarines.

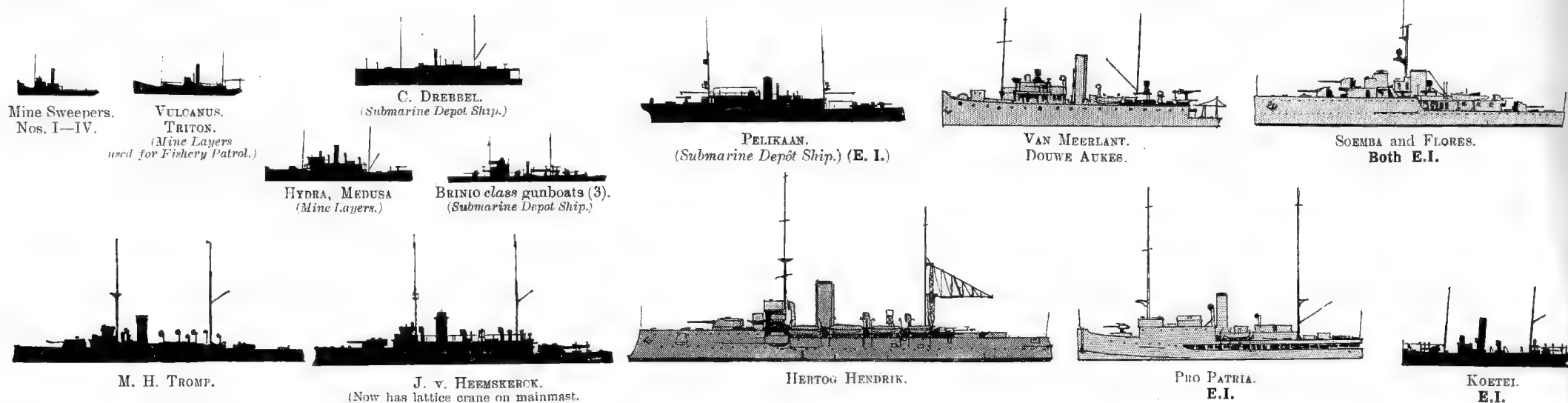
Mercantile Marine.

From "Lloyd's Register" 1929 figures. (Ships under 100 tons gross excluded.)

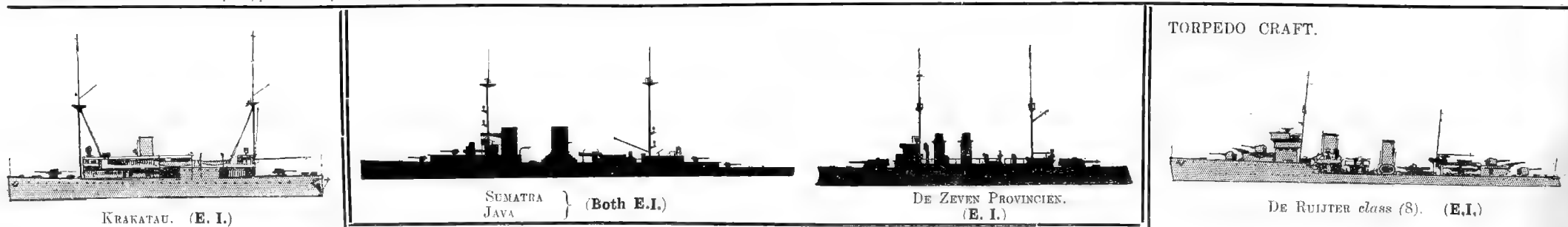
Total gross Tonnage, 2,939,067.

Naval Estimates, 1929.

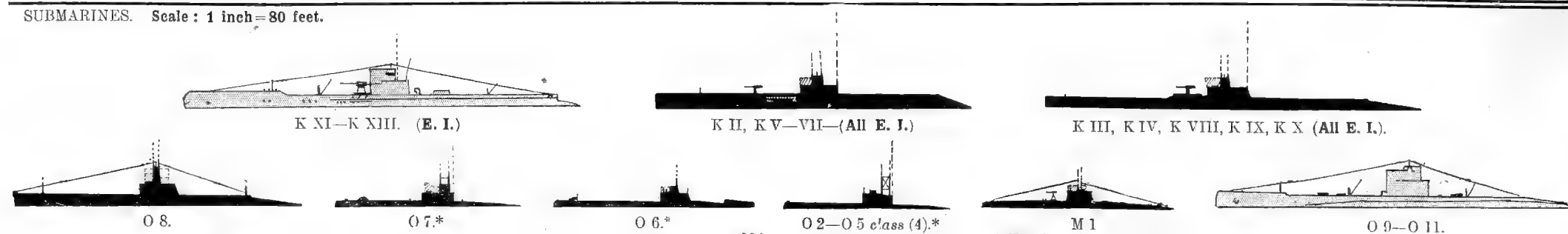
Naval Construction	12,151,050 florins.
Ordinary	23,345,810 "
Non-military Expenses	5,048,110 "
	40,544,970 "

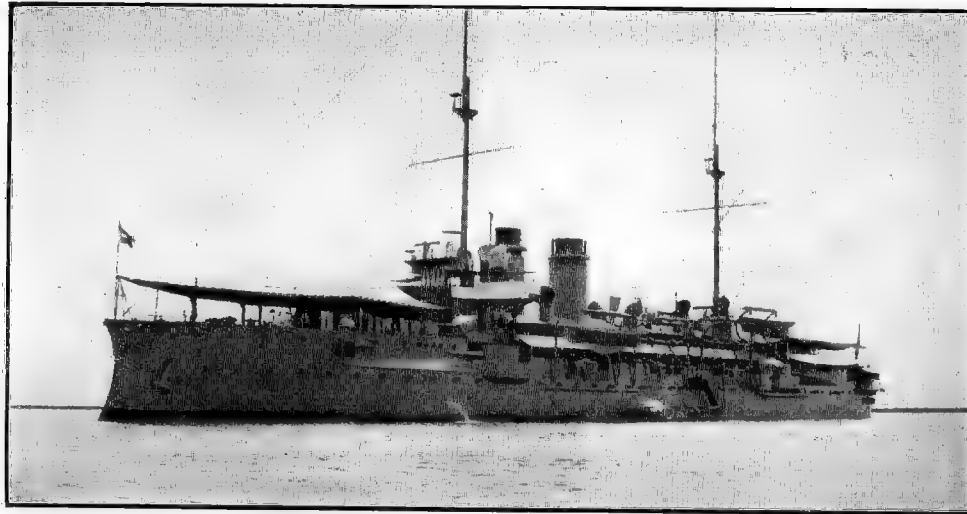


Aft barbettes normally hidden behind lowering bulwarks.
With bulwarks raised, these ships appear to be flush-decked from stem to stern, and to have no aft barbettes.



SUBMARINES. Scale: 1 inch = 80 feet.





1924 Photo, R. F. Schellema, Esq.

East Indies Station.

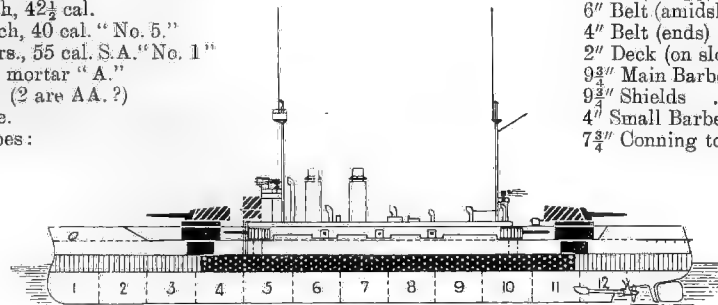
DE ZEVEN PROVINCIEEN (March, 1909).

Displacement, 6530 tons. Complement, 447 (A), 409 (H).

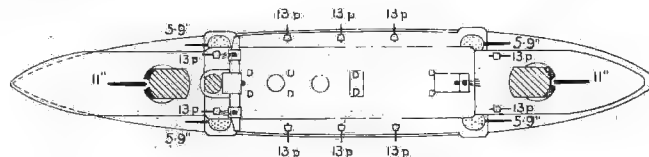
Length (o.a.), 333 feet. Beam, 56.1 feet. Maximum draught, 20.2 feet.

Guns (Krupp):
2—11 inch, 42½ cal.
4—5.9 inch, 40 cal. "No. 5."
10—13 pdrs., 55 cal. S.A. "No. 1"
1—9 pdr. mortar "A."
4—1 pdr. (2 are A.A.?)
2 machine.
Torpedo tubes:
None.

Armour (Krupp):
6" Belt (amidships) ...
4" Belt (ends) ...
2" Deck (on slopes) ...
9¾" Main Barbettes (N.C.) ...
9¾" Shields ...
4" Small Barbettes ...
7¾" Conning tower (N.C.) ...



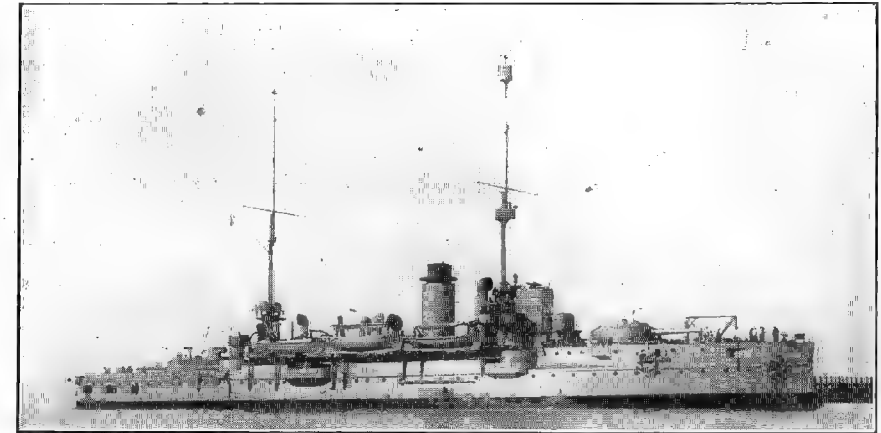
Ahead:
1—11 in.
2—5.9 in.



Broadside: 2—11 in., 2—5.9 in.

Machinery: 2 sets triple expansion. 2 screws. Boilers: 8 Yarrow. Designed H.P. 8000=16 kts. (Trials: 8516=16.3 kts.) Coal: normal, 700 tons; maximum, 1030 tons. Radius of action, 2100 miles at 15.3 kts.; 5100 miles at 8 kts. Amm. hoists improved 1920.

Notes.—Main belt is 7 feet wide. Laid down Feb., 1908, at Amsterdam D.Y.



Note.—Aft barbette is hidden behind lowering bulwarks. 1918 Photo, Fotopersbureau "Holland," Amsterdam.
Now carries crane abaft mainmast, as in *Hertog Hendrik*.

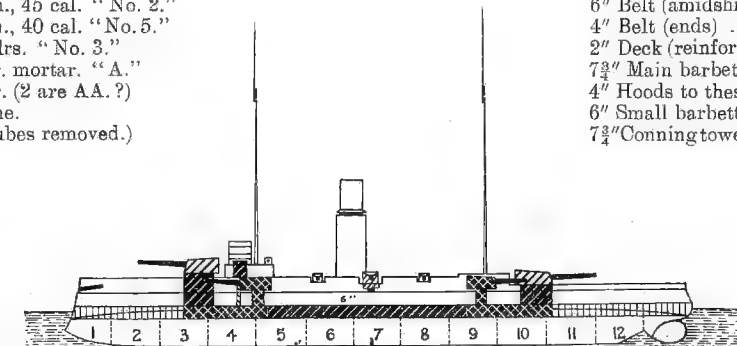
JACOB VAN HEEMSKERCK (September, 1906).

Displacement, 5000 tons. Complement, 351.

Length (o.a.), 321½ feet. Beam, 49.9 feet; Beam outside sponsons, 55.4 feet. Max. draught, 18¾ feet.

Guns (Krupp):
2—9.4 in., 45 cal. "No. 2."
6—5.9 in., 40 cal. "No. 5."
6—13 pdrs. "No. 3."
1—9 pdr. mortar. "A."
4—1 pdr. (2 are A.A.?)
2 machine.
(Torpedo tubes removed.)

Armour (Krupp)
6" Belt (amidships) ...
4" Belt (ends) ...
2" Deck (reinforcing belt)
7¾" Main barbettes ...
4" Hoods to these ...
6" Small barbettes ...
7¾" Conning tower (K.C.) ...



Ahead:
1—9.4 in.
2—5.9 in.



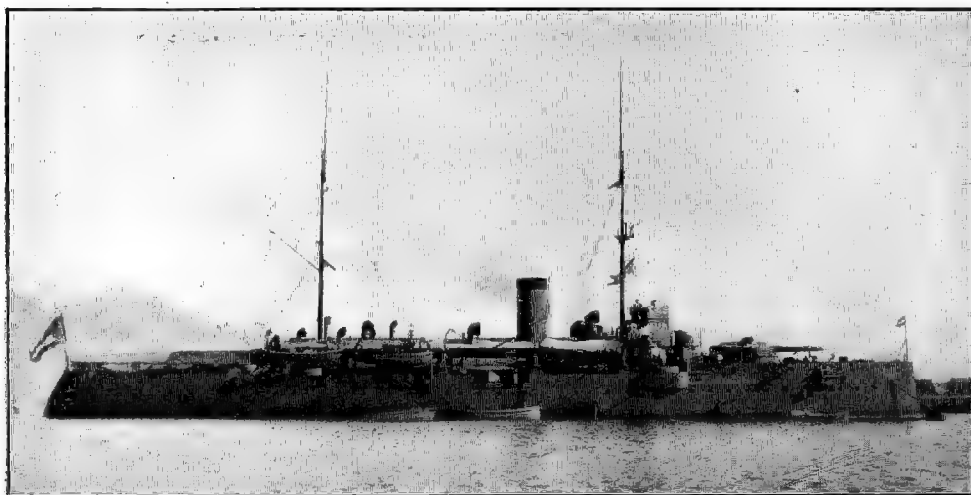
Astern:
1—9.4 in.
2—5.9 in.

Broadside: 2—9.4 in., 3—5.9 in.

Machinery: 2 sets triple expansion. 2 screws. Boilers: 6 Yarrow. Designed H.P. 6400=16.5 kts. Coal: normal — tons; maximum 610 tons.

Notes.—Main belt is 6 feet wide and about 220 feet long. Begun at Amsterdam D.Y., 1905, and completed, May, 1908. Trials: I.H.P. 6396=16.54 kts. Radius of action: 3300 miles at 10 kts.

Aircraft Note.—Two seaplanes added to equipment, May, 1929.



Note.—Aft barbette is hidden behind lowering bulwarks.

1925 Photo, W. A. Fuller Esq.

MARTEN HARPERTZOOON TROMP (1904).

Displacement, 5300 tons. Complement, 349 (H).
Length (o.a.), 330·7 feet. Beam, 49·8 feet. Maximum draught, 18·7 feet.

Guns—(Krupp):

- 2—9·4 inch, 40 cal. "No. 2."
- 4—5·9 inch, 40 cal. "No. 5."
- 8—13 pdr. "No. 3"
- 1—9 pdr. mortar. "A."
- 4—1 pdr. (2 are A.A. ?)
- 2 machine.

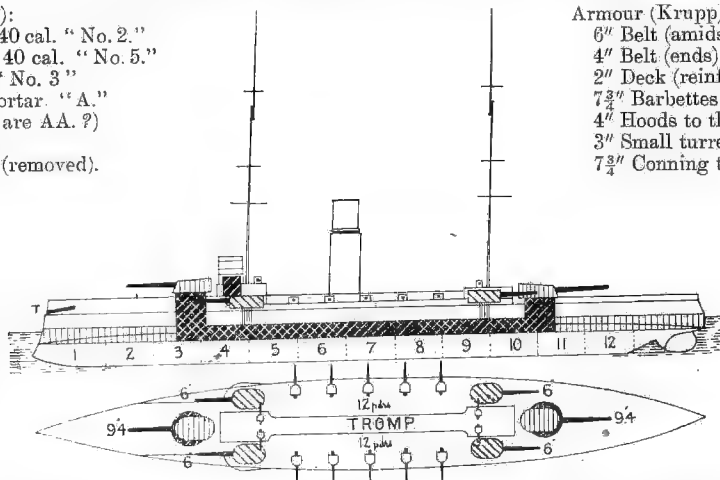
Torpedo tubes (removed).

Armour (Krupp):

- 6" Belt (amidships)
- 4" Belt (ends)
- 2" Deck (reinforcing belt)
- 7½" Barbettes (N.C.)
- 4" Hoods to these
- 3" Small turrets
- 7½" Conning tower

Ahead:

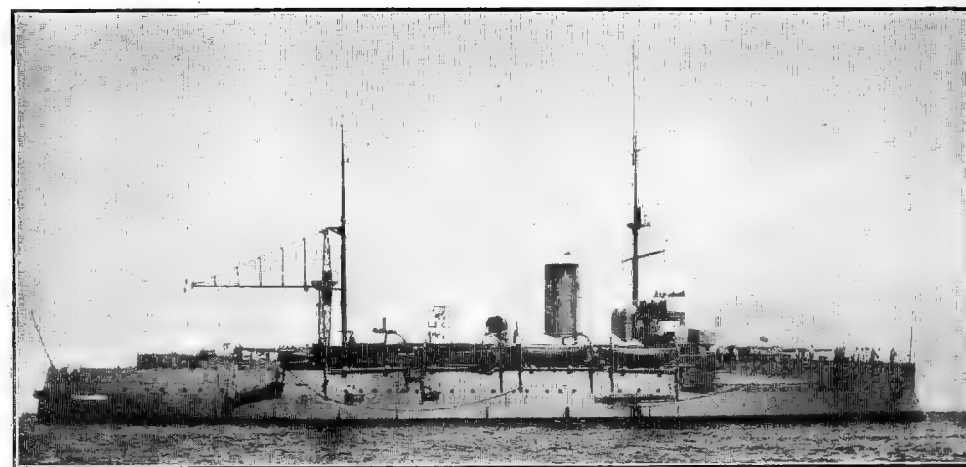
- 1—9·4 in.
- 2—5·9 in.



Astern:

- 1—9·4 in.
- 2—5·9 in.

Machinery: 2 sets triple expansion. 2 screws. Boilers: 6 Yarrow. Designed H.P. 6400 = 16 kts. Coal: normal 680 tons; maximum 830 tons. Radius of action: 1600 miles at 14½ kts., 4100 miles at 9½ kts. Trials ('06).—6,405 I.H.P. = 16·7 kts. Begun at Amsterdam D.Y., 1903, and completed 1906.



1928 Photo, J. Vlieger, Amsterdam.

HERTOG HENDRIK (1902).

Displacement, 5080 tons. Complement, 347 (H).

Length (o.a.), 316·9 feet. Beam, 49·8 feet. Maximum draught, 19 feet.

Guns (Krupp):

- 1—9·4 inch, 40 cal. "No. 1."
- 4—5·9 inch, 40 cal. "No. 4."
- 4—15 pdr.
- 4—13 pdr. "No. 3."

Torpedo tubes (removed).

Armour (Krupp):

- 6" Belt (amidships)
- 4" Belt (ends)
- 2" Deck (reinforcing belt)
- 9½" Barbettes
- 4" Hoods to these
- 9½" Conning tower (fore)

Gunnery Notes—Armament reduced, 1926, by removal of 1—9·4 inch and several smaller guns, on appropriation as Cadets' Training Ship.

Armour Notes—The belt is 5½ feet wide and four feet of it is below the waterline. Gratings to engine room hatches are 4·7 inches thick.

General Notes—2[planes added to equipment, 1928.

Machinery: 2 sets triple expansion. 2 screws. Boilers: 6 Yarrow. Designed H.P. 6300 = 16 kts. Coal: normal 680 tons; maximum 830 tons. Same radius of action as *M. H. Tromp*. Begun 1900, at Amsterdam D.Y..

1915 CRUISERS. (*Kruisers*.)

Cruisers—NETHERLANDS

(*East Indies Station*.)

JAVA (Aug. 6th, 1921) & **SUMATRA** (Dec. 29th, 1920).

Normal displacement, 7050 tons.

Complement, 480 (504 with E.I. personnel added).

Length (*o.a.*), 509.5 feet. Beam, 52½ feet. Max. draught, 18 feet.

Guns (Bofors):
10—5.9 inch (50 cal.) "No. 6"
4—13 pdr. S.A., 55 cal. (anti-aircraft) "No. 4."

4 machine.

Torpedo tubes:

None.

Mines: 12.

Searchlights: 6—47".

Paravanes: 4.

Range Finders: 4.

Armour (Coventry):

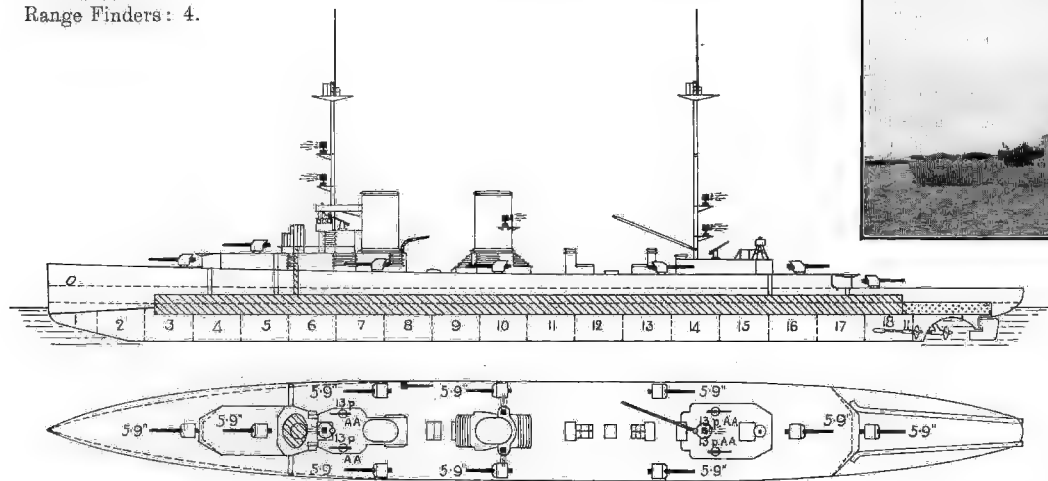
3" Belt

Deck { 1" flat
2" slopes

4" Gun shield faces
(much thinner at
sides and roof)

2" Funnel bases

5" Conning tower



Ahead:
4—5.9 in.

Broadside: 7—5.9 in.

Astern:
4—5.9 in.

Machinery: 3 sets Krupp-Germania turbines. 3 screws. Boilers: 8 Schulz-Thornycroft. Designed H.P., 65,000=30 kts. Fuel, oil only: *normal*, 1070 tons; *maximum*, 1200 tons. Radius of action: 4800 miles at 12 kts, 3600 miles at 15 kts.

Armour Notes.—O.T. divided into gunnery control and navigation compartments. 3" belt is 392½ feet long. Towards stern and over steering gear, belt is narrower for a length of 42½ feet, and is only 2" thick.

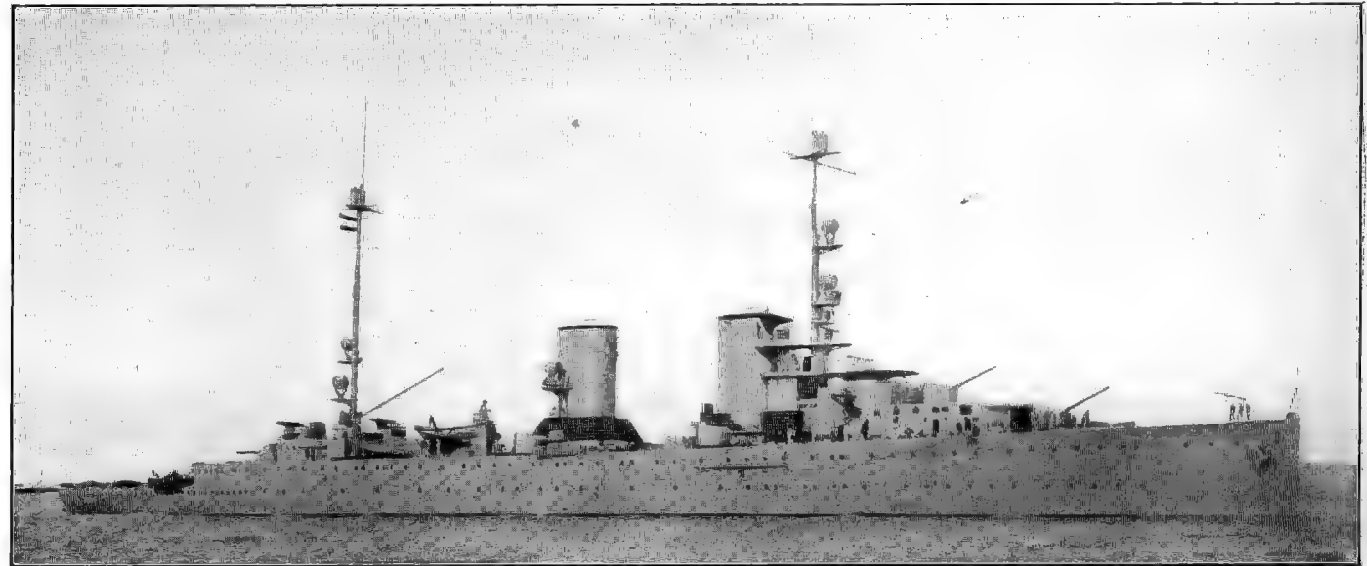
Name	Builder	Machinery	Laid down	Completed	Trials	Boilers	Best recent speed.
Sumatra	Nederlandsche Scheepsbouw Maatschappij, Amsterdam	Krupp, Germania	July '16	Nov. 1925	82,000=31.8	Schulz	30.3
Java	K. M. de Schelde, Flushing	Krupp, Germania	May '16	1924	73,000=31.5 (St. Abbs, 7/7/25)	Schulz	

* Contracted for, June, 1917.

Aircraft Notes.—Each ship carries 2 Fairey III D type seaplanes, with 450 h.p. Napier "Lion" engines, crew 3 men. To handle these, 2 small cranes are now mounted abeam, to port and starboard, just abaft first funnel.

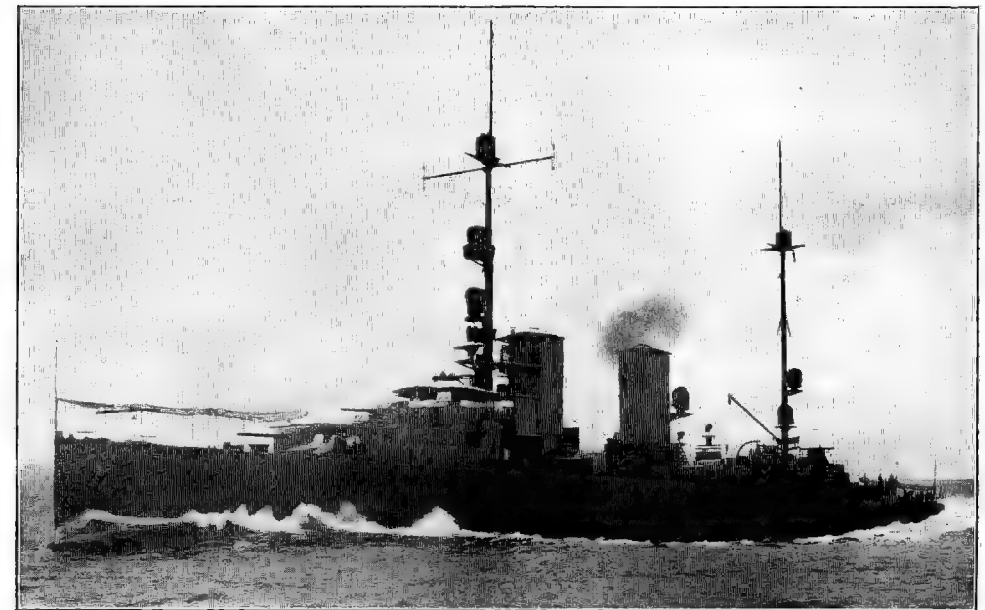
General Notes.—The German design of these ships is evident in their appearance. A third ship of this type (*Celebes*) was authorised, but cancelled. *Java*, though completed in 1924, did not enter into service until May, 1925.

Gunnery Notes.—5.9 inch guns elevate to 25-30°. Electric hoists.



JAVA.

1924 Photo, by courtesy of the Ministry of Marine.



JAVA.

1924 Photo, by courtesy of the Ministry of Marine.

NETHERLANDS—Destroyers.

7* + 4§ Destroyers (Torpedobootjagers).

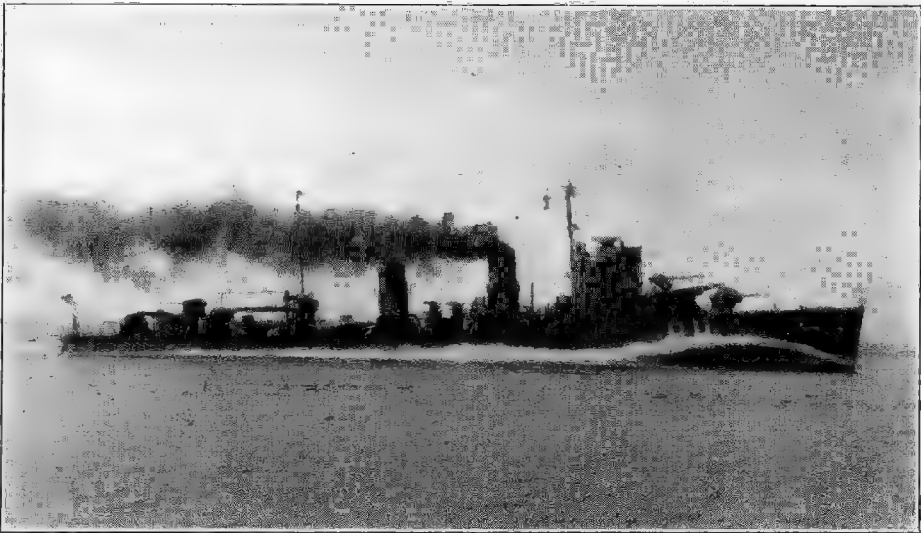
No.	Type	Date	Dis- place- ment	H.P.	Max. Speed	Fuel	Comp- lement	T. tubes	Max. Dra'ght
8	<i>De Ruijter</i> (Y)	Bldg.	tons			tons			feet
1	<i>Panther</i> (Y)	'12-'14	1620	31,000	34	330	126	6	9½
1	<i>Lynx</i> (Y)	'12-'13	510	8000—	30	120	64†	2	9½
1	<i>Jakhals</i> (Y)	'09-'12		8500					

*Built. §Building or Completing. Y=Yarrow design. †84 when on Foreign Service.



PIET HEIN.

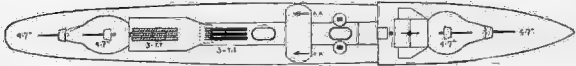
1928 Photo.



PIET HEIN.

1929 Photo, by courtesy of Messrs. Burgerhout's (builders).

DESTROYERS.



8 Yarrow type: *De Ruijter* (K. M. de Schelde, Flushing, Oct. 23, 1926), *Evertsen* (29 Dec., 1926), *Kortenaer* (June 30, 1927), *Piet Hein* (April 2, 1927), all by Burgerhout's, Rotterdam; *Van Galen* (June 28th, 1928), *Witte de Wit* (Sept. 11th, 1928), both by M. Feijenoord. *Banckerts*, *Van Nes*, both by Burgerhouts. Displacement: 1620 tons. Dimensions: 307 (p.p.), 322 (o.a.) × 31½ × 9½ feet max. draught. Armament: 4—4.7 inch (50 cal.), 2—3 inch A.A., 6—20.8 inch tubes in triple deck mountings in first four. Other four carry A.A., armament of 1—3 inch and 4—2 pdr. pompoms. Parsons geared turbines and Yarrow super heated boilers (250 lbs. pressure in first four, 400 lbs. in others). Designed H.P. 31,000=34 kts. in loaded condition, 36 kts. light. Oil: 330 tons. Complement, 126.

Notes.—These destroyers have been designed throughout by Messrs. Yarrow & Co., Ltd., and constructed under their supervision. The design was selected by the Dutch Government from several submitted by firms in England, France, Germany and the U.S.A. Included in the equipment of the vessels are a seaplane, bomb throwers and 24 mines. There is also a complete fire control system. *De Ruijter* and *Evertsen* both completed late in 1927, former said to have made 36 kts. with 90% full load. All are intended for East Indies Station.



(ALL ON EAST INDIES STATION.) 1921 Photo, by courtesy of the Chief of Naval Staff, Batavia.

3 Yarrow type: *Jakhals* (1911), *Lynx* (1913), both built by K. M. de Schelde, Flushing, *Panther* (1913), built by Feijenoord Co., Rotterdam. 510 tons. Dimensions: 230 (o.a.)×22×6½ feet normal draught, max. draught 9½ feet. Armament: 4—13 pdr. (55 cal., semi-auto.) "No. 2," (in *Panther* "No. 3") 4 machine, 2—18 inch tubes. Designed H.P. 8000 to 8500=30 kts. (30 to 30.3 on trials). 4 Yarrow boilers. Radius of action: for first two boats named, 2360 miles at 8½ kts. and 760 miles at 20 kts. *Lynx*, *Panther* carry an extra 12½ tons oil fuel, and can steam 2700 miles at 8½ kts. and 750 miles at 20 kts. (*Bulhoed* and *Vos* removed from Effective List 1928.)



Appearance Note.—The four funnels are of varying heights, the first funnel being highest and the fourth shortest, as shown by illustrations.

TORPEDO BOATS.

T.B.—NETHERLANDS

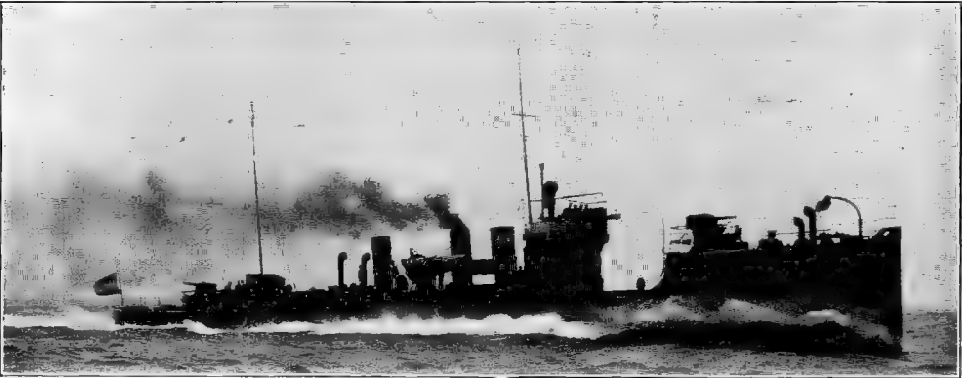
16 Torpedo Boats (Torpedobooten).

No.	Type	Date	Dis- place- ment	H.P.	Max. Speed	Fuel	Compl- ement	T. tubes	Max. Draught
	<i>S</i> Sea-going class—		tons			tons			feet
4	Z 8—Z 5	'14—'16	310	5600	27	82	39	4	5½
4	Z 4—Z 1	'15—'21	322	5600 (t)	27	81½	39	4	
	<i>S</i> 1st class—								
3	G 16, 15, 13	'12—'14	180	2600	25	44	27	3	8
2	G 12, 2	'03—'06	140	1900	25	30	25	3	7½
3	<i>Draak</i>	'05—'07	103	1560	24	21	14+6*	2	6½
	All E.I.M.								

All Yarrow types. (t)=Turbines. Z=Zeegaand (sea-going) type. G=Groot (large) type.

*Complements of these boats are 14 Europeans+6 East Indians.

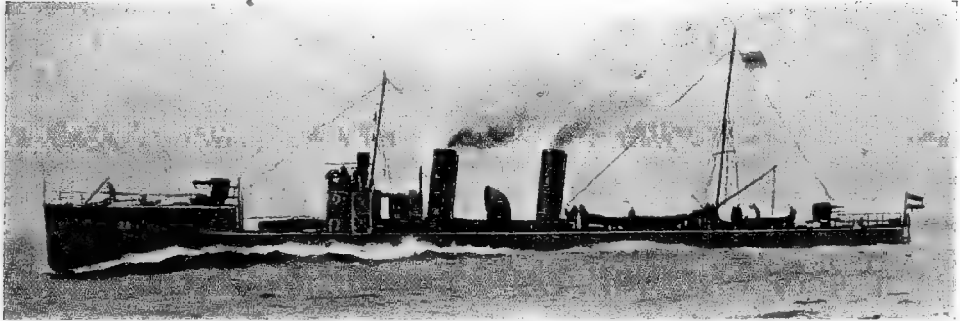
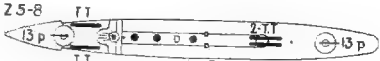
The old G boats and E.I. boats now used for subsidiary duties.



Z 8.

1918 Photo, Fotopersbureau "Holland," Amsterdam.

4 510 ton boats, Z 8, Z 7 (K. M. de Schelde, Flushing, 1915), Z 6, Z 5 (Feijenoord Co., Rotterdam, 1915). 310 tons. Dimensions: 193×19½×5½ feet. Guns: 2—13 pdr., "No. 4," 2 machine. Torpedo tubes: 4—17.7 inch (one twin deck mounting + 2 single ditto). Designed H.P. 5700 to 5500—27 kts. (made about 27.4 on trials). Machinery: Reciprocating. Boilers fitted to burn coal or oil. Carry 75 tons coal + 7 tons oil. Radius of action: 425 miles at 20 kts. Completed 1916.



Z 4.

Note.—Z 4 high funnels, short foremast, high mainmast. Z 1 has short funnels, high foremast, short mainmast. Z 3—2 short funnels.

4 522 ton boats, Z 4—Z 1 (Ned. Scheepsb. Mij., Amsterdam, 1916-18.). 322 tons. Dimensions: 201×20½×6 feet. Guns: 2—13 pdr., "No. 4," 2 machine. Torpedo tubes: 4—17.7 inch (one twin deck mounting + 2 single ditto). Designed S.H.P. 5500—27 kts. Curtis type turbines. Boilers fitted to burn coal or oil. Carry 72 tons coal + 9.4 tons oil. Radius of action: 425 miles at 20 kts.

Note.—The original boats, Z 4—Z 1, building by the German Vulkan Co. in 1914, were appropriated by the German Navy, became the German Destroyers V 108—105. German V 107 War Loss, while V 105, 106, 108 were partitioned between Poland and Brazil, 1920. These four "replace" boats were begun by the Nederlandsche Scheepsbouw Maatschappij, Amsterdam, in 1914, but owing to lack of materials they were not finished until 1919, or after the Z 8—Z 5 boats listed above. Z 2 last boat of class to be delivered was not commissioned till 12/1/21.



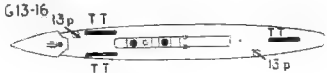
G 13.

1919 Photo, Fotopersbureau "Holland," Amsterdam.

(Now only used for Subsidiary Duties in Harbour.)

3 180 ton boats ('12-'14): G 16, G 15 (Feijenoord Co., Rotterdam, 1914). G 13 (K. M. de Schelde, Flushing, 1913), 180 tons. Dimensions: 162.4×17×4.6 feet. Armament: 2—13 pdr. "No. 4," 3—17.7 inch deck tubes. Designed H.P. 2600—25 kts (26 kts. on trials). Coal: 44 tons.

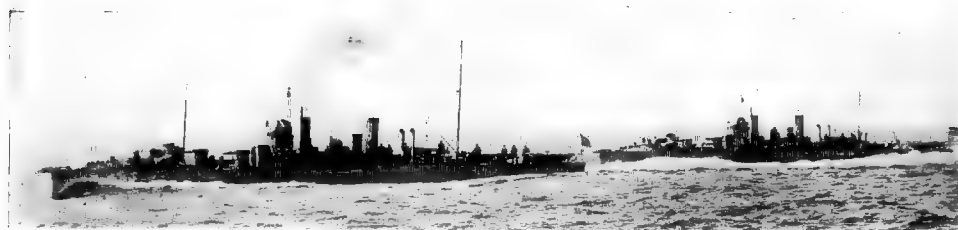
G 14, Boiler explosion, February, 1919. Now sold.



NETHERLANDS—T.B. and S/M.

TORPEDO BOATS AND SUBMARINES (*Onderzeebooten*).

Torpedo Boats—continued.



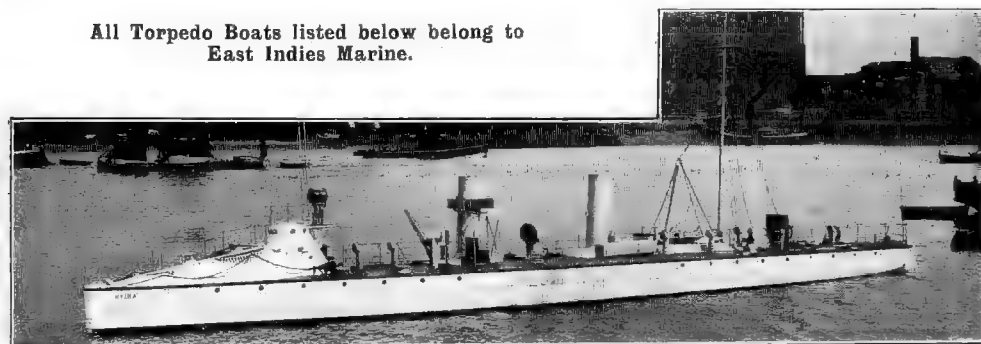
Photo, Fotopersbureau "Holland," Amsterdam.

(Now only used for subsidiary duties in Harbour.)

I ('07-'09 boat):—**G 12.** } Armament: 2—4 pdr., 3—17.7 inch deck tubes. Radius: 1230 miles at 8 kts.
I ('05-'06 boat):—**G 2.** }

Note.—*G 11* mined and sunk off Vlieland, March, 1918. *G 2* mined Feb., 1918, salvaged in sections and rebuilt.

All Torpedo Boats listed below belong to East Indies Marine.



3 *Draak* class:—**Draak, Krokodil, Zeeslang.** (1906-7). } Armament: 2—1 pdr., 2—17.7 inch tubes, (viz.—
1 bow submerged, 1 deck tube.)

(Nominal radius of all these boats about 1500 at 8½ kts.)

Appearance Note.—These boats now have bridge built against fore funnel, and on bridge a light, high and very narrow framework with signalling lamp at top. General appearance very like T.B. on right of top illustration, but boats are shorter.

(E. Indies Station), Coastal Motor Boats.

S.M. 1, S.M. 2, S.M. 3, S.M. 4, all by Messrs. John I. Thornycroft & Co., Ltd., 1927-1928. 55 × 11 feet. 2 Thornycroft motors, each 375 B.H.P. = 37 kts. contract speed, (trials 39 kts.). Auxiliary engine to give a cruising radius of 800 miles. Armament: 2 Lewis guns, 2—18 inch torpedoes, 4 D.C., and an outfit of Thornycroft C.M.B. type Smoke Floats.

23 + 6 (building) Submarines.

Tabulated Details.

The following details are mainly from official data communicated by the Naval Staff. Dates refer to time when first boat was laid down and last boat completed.

No.	Type	Date	Dis- place- ment tons.	H.P.	Max. speed kts	Extreme endurance.	Com- ple- ment	T. tubes	Max. draught feet
3	<i>K XVI—XIV</i>	Bldg.	562	1800	15	3500 miles at 10 kts.		8	
3	<i>O 14—O 12 (ND)</i>	Bldg.	700	620	8	12 miles at 8 kts.		5	
3	<i>K XIII—K XI (ND)</i>	'22-'25	670	2400	15	3500 miles at 11 kts.			
			820	725	8.8	13 miles at 8.8 kts.	31	6	12.2
3	<i>O 11—O 9 (ND)</i>	'22-'26	515	900	12	3500 miles at 8 kts.			
			645	610	8.5	11 at 7.5 kts.	29	5	11.5
3	<i>K X—K VIII (H)</i>	'17-'23	570	1550	15	3500 miles at 11 kts.			
			715	630	8	12 miles at 8.5 kts.	29	4	12.1
3	<i>K VII—K V (HD)</i>	'15-'20	560	1200	15	3500 miles at 11 kts.			
			640	500	8	12 miles at 8.5 kts.	29	6	12.5
2	<i>K IV—K III (H)</i>	'14-'20	560	1200	15	3500 miles at 11 kts.			
			710	630	8	25 miles at 8.5 kts.	29	6	11.5
1	<i>M 1 (W) (ex UC 8)</i>	1915†	160	96	5.6	900 miles at 5 kts.			
			180	175	5.7	50 miles at 2.5 kts.	15	6*	9.8
1	<i>O 8 (H) (ex H 6, Brit.)</i>	1915†	370	480	13	1350 miles at 12 kts.			
			440	320	8.5		26	4	12.8
1	<i>K II (HD)</i>	'14-'20	560	1800	—	3500 miles at 11 kts.			
			610	500	8.5	12 miles at 8.5 kts.	29	6	12.5
1	<i>O 7 (HD)</i>	'13-'16	180	350	11.5	750 miles at 10 kts.			
			210	185	—	12 miles at 8.5 kts.	15	3	9.8
1	<i>O 6 (H)</i>	'13-'16	190	350	12	750 miles at 10 kts.			
			230	180	8.5	miles at 8.5 kts.	15	3	9.8
4	<i>O 5—O 2 (HW)</i>	'09-'13	130	350	12	500 miles at 10 kts.			
			150	200	8	26 miles at 8.6 kts.	10	2	9.5

* Mine-laying tubes. † Taken over in 1917.

Notes on above Table.

All boats with letter *K* (*Kolonien*) and *Roman* numerals are East Indies Marine. All boats with letter *O* (*Onderzeeboot*) and Arabic numerals for service in home waters. ND boats are *Navy Design*. (H) submarines are "Holland" type, built by the Koninklijke Maatschappij de Schelde, to plans by Electric Boat Co., U.S.A. (HD) submarines are of the Hay-Denny type, built by the Maatschappij Fijenoord, Rotterdam, to plans by Marley F. Hay and Messrs. Denny & Co., Dumbarton. (HW) submarines are of the Holland type, built by the K. M. de Schelde, to plans by Messrs. Whitehead & Co., Fiume; no further boats of this design are now being built. W = Werner design (German Navy).

In H.P. column, B.H.P. of *M 1*, *O 7*, *O 6*, *O 5—O 2* are for one set of engines. All other boats show total B.H.P. for two sets of engines. B.H.P. 1500 for *K IV*, *K III* is average for this class, as one boat has 2 sets of 600 B.H.P. (total 1200) engines and the other 2 sets of 900 B.H.P. (total 1800) engines.

Submarines on the East Indies Station are fitted with special cooling plant to render them more habitable.

New Construction.

3 *Navy* (*Home Service*) type: *O 12*, *O 13*, *O 14*, ordered December, 1927 (first) and June, 1928 (other two) from the Schelde Yard. Displacement: 762 tons. H.P. 1500 = 15 kts. Armament: 2 guns, —20.9 inch tubes, (4 bow, 1 stern) Diving limit, 33 fathoms.

3 *Navy* (E.I.) type: *K XIV*, *K XV*, *K XVI*. Ordered 1929. No particulars yet available, but will be improved versions of *K XI* class.

(Continued on next page.)



(East Indies Marine.) 1925 Official Photo, by courtesy of Chief of Naval Staff, The Hague.

3 Navy type: **K XIII** (Dec., 1924), **K XII** (Nov., 1924), **K XI** (April, 1924), all by M. Feijenoord, Rotterdam. Displacement: 670 tons on surface, 820 tons submerged. Dimensions: 231 × 20½ × 12½ feet. Engines: 2 sets M.A.N. Diesels, each 1200 B.H.P. = 15 kts. surface speed (17 kts. reached on trials). Submerged speed: 8 kts. Armament: 1—3.5 inch A.A. and 2—21 and 4—17.7 inch tubes (of which 4 are in bow and 2 at stern). 12 torpedoes carried. Complement, 31. Provided for under 1918 Naval Programme.

Note.—**K XIII** completed the voyage from Amsterdam to Surabaya, via the Panama Canal, unescorted, without mishap. Period occupied was from May 27 to Dec. 12, 1926.



O 9.

1926 Photo, R. F. Schelltema, Esq.



O 11.

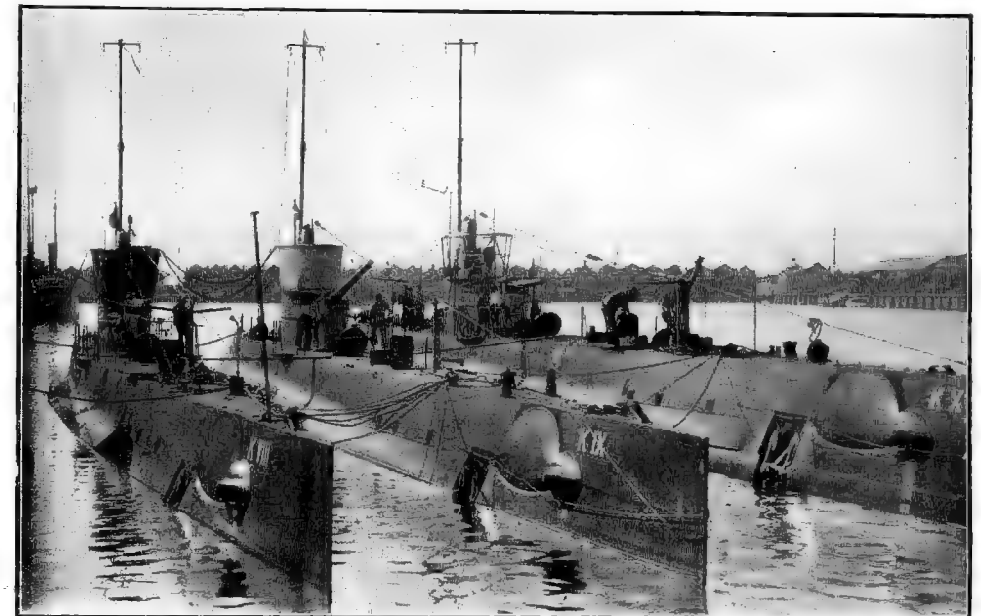
1926 Photo, by courtesy of Chief of Staff, The Hague.

3 Navy (Home Service) type: **O 11** (M. Feijenoord, 19th March, 1925), **O 10** (Nederlandsche Scheepsbouw, 30th July, 1925), **O 9** (K. M. de Schelde, 1925). Displacement: 515 tons on surface, 645 tons submerged. Dimensions: 180 × 19 × 11½ feet. Engines: 2 sets Sulzer Diesels, each 450 B.H.P. = 13 kts. on surface. Submerged speed: 8½ kts. Armament: 1—3.5 inch A.A. and 5 torpedo tubes (of which 2—21 inch are in bow, 2—17.7 inch bow, and 1—17.7 inch stern). 10 torpedoes carried. Provided for under 1917 Programme.



K X.

1926 Photo R. F. Schelltema, Esq.

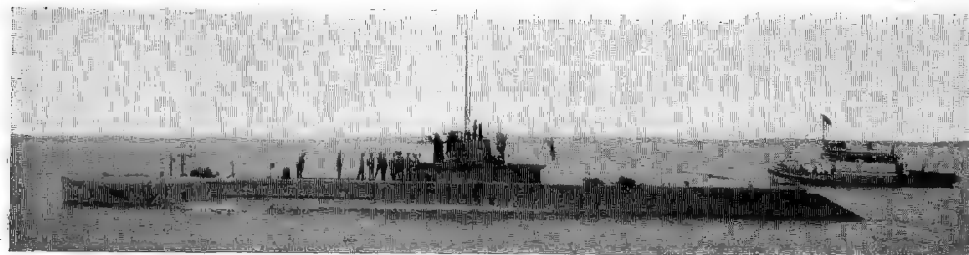


K. VIII, IX, X.

(East Indies Marine.)

1925 Photo, by favour of R. F. Schelltema, Esq.

3 Holland type: **K X** (May, 1923), **K IX** (1923), and **K VIII** (1922), all by K. M. de Schelde. Displacements: 570 tons on surface, about 715 tons submerged. Dimensions: 211 × 18½ × 12 feet. Armament: 1—3.5 inch A.A. and 4—17.7 inch tubes. Machinery: **K VIII** has two sets of 900 B.H.P. Diesel engines, M.A.N. type while **K IX**, and **K X** have 2 Schelde-Sulzer Type of 800 h.p. each for a surface speed of 15 kts. (16 reached on trials). Electric motors B.H.P. 630 = 8 kts. Submerged speed. Endurance about 3500 miles at 11 kts. on surface. Complement, 29. Provided for by the 1916 Naval Programme. Note arrangement of hydroplanes and anchor recesses.



K V in East Indies. (East Indies Marine.)

1921 Photo, by courtesy of the Chief of Naval Staff, Batavia.

8 Hay-Denny type: **KVII** (launched Mar. 8th, 1921), **KVI** (launched 1921) and **KV** (launched 1920). All by M. Feijenoord, Rotterdam. Displacements, dimensions and armament as **KII** in next column. Machinery: 2 sets of 600 B.H.P. Sulzer Diesel engines=16 kts. max. speed on surface. Submerged speed 9 kts., endurance as **KII**. Excepting minor modifications and type of engines, these boats are identical with **KII**. Originally intended they should have M.A.N. engines but as the German firm was entirely engaged on engine building for German submarines, contract was declined. Sulzer engines of less B.H.P. were accordingly used in these boats. Begun 1915. **KV** completed 1921, **KVI** completed 1921, **KVII** completed 1922.

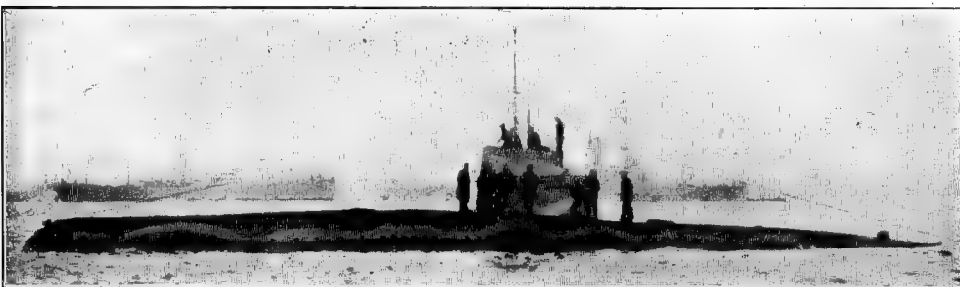


K III on trials.

(East Indies Marine.)

1920 Photo, by courtesy of M. F. Hay, Esq.

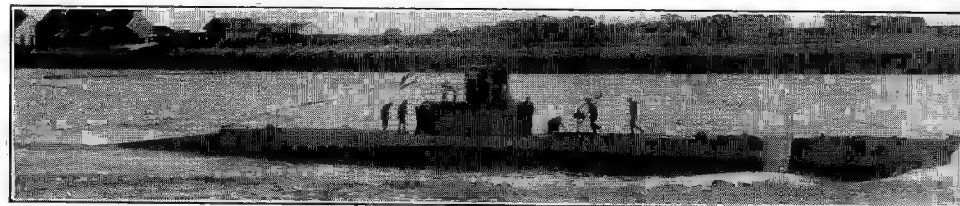
2 Holland type: **KIV** (1920) and **KIII** (1919). Both by K. M. de Schelde, Flushing. Displacement: about 560 tons on surface, 715 tons submerged. Dimensions: 211½ × 18½ × 11½ feet. Armament: 1—13 pdr. and 6—17-7 inch torpedo tubes. Designed surface speed 16 kts. Machinery: **KIII** has 2 sets of 900 B.H.P. M.A.N. (completed by K. M. de Schelde) and **KIV** has 2 sets of 600 B.H.P. Sulzer engines. Electric motors B.H.P. 1200=8 kts. Endurance: 3500 miles at 11 kts. on surface.



M 1. Appearance generally as above.

War Photo, Alfieri.

1 Werner type: **M1** (ex-German mine-laying submarine UO 8, Vulkan, Hamburg, 1915, stranded on Terschelling Island, Nov., 1915, salvaged, interned and purchased by Dutch Government, 1917). Displacements: 160 tons surface, 180 tons submerged. Dimensions: 111½ × 10½ × 9½ feet. Guns: 1 machine. No torpedo tubes but carries 12 mines in 6 mine-laying tubes before conning tower. Machinery: 1—4 cyl. Daimler oil engine=5-6 kts. (7-5 kts. for short periods with electric motors), on surface: max. submerged speed: 5-7 kts. (1 hour). Endurance: 1050 miles at 5 kts. on surface; 50 miles at 2½ kts. submerged.



O 8.

1918 Photo, Fotopersbureau "Holland."

1 Holland type: **O 8** (ex-British submarine **H 6**), built by Canadian Vickers Co., Montreal, 1915, wrecked on Schiermonnikoog Island, Jan., 1916, salvaged Feb., 1916, interned at Nieuwediep, and subsequently purchased by Dutch Government. Displacements: 370 tons on surface, 440 tons submerged. Dimensions: 150½ × 15½ × 12½ feet. Armament: 4—18 inch torpedo tubes. Machinery: 2 sets 8 cyl. Nelseco* Diesel engines=13 kts. on surface; submerged speed 8-5 kts. Fuel: 16 tons oil carried.

*"Nelseco" is trade mark for engines manufactured by the New London Ship & Engine Co, Groton, Conn., U.S.A. Their engines are the German M.A.N. (Nuremberg) type built under licence.



K II.

(For East Indies Marine.)

1921 Photo, by courtesy of R. F. Schellema, Esq.

1 Hay-Denny type: **KII** (launched 1917.) By M. Feijenoord, Rotterdam. Displacements: 560 tons on surface, 610 tons submerged. Dimensions: 177 × 16½ × 12-5 feet. Armament: 1—13 pdr. (anti-aircraft) and 6—17-7 inch torpedo tubes, of which two are on revolving twin deck mount within superstructure and before C.T., and are normally closed by sliding doors covering tube ports. Machinery: 2 sets, 8-cyl. 900 B.H.P. M.A.N.* Diesel engines=16 kts. on surface. Max. submerged speed 8½ kts. Endurance: 3500 miles (normal), 5500 miles (extreme,) at 11 kts. on surface; 3 hours continuous running at 8½ kts. submerged. Begun 1914, completed 1921.

*M.A.N. Co. could not complete engines owing to pressure of war contracts for German Navy; these engines were completed by K. M. de Schelde.



1918 Photo, Fotopersbureau "Holland."

1 Hay-Denny type: **O 7** (M. Feijenoord, Rotterdam, 1916). Displacements: about 180 tons on surface, 210 tons submerged. Dimensions: 105 × 12 × 9½ feet. 3—17-7 inch torpedo tubes (2 bow, 1 stern). Machinery: 1 set 6-cyl. M.A.N. Diesel engines=11½ kts. on surface. Max. submerged speed 9 kts. Endurance: 750 miles at 10 kts. on surface; 3 hours continuous running submerged at 8½ kts.

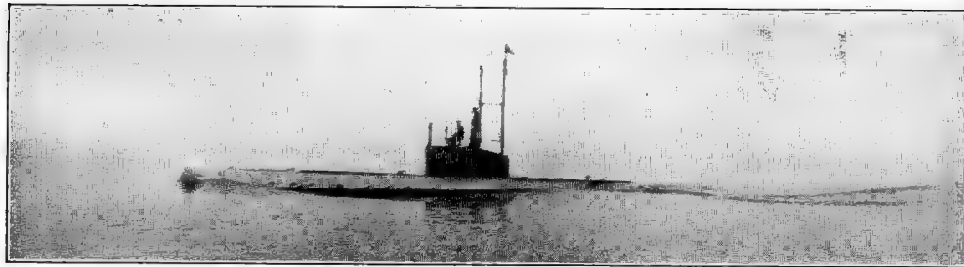
Appearance Note.—Has mast attached to a big stirrup which straddles C.T. and rises as high as periscope head. Has jumping wires fitted fore and aft.

Submarines—continued.



1918 Photo, Fotopersbureau "Holland."

1 *Holland* type: **O6** (K. M. de Schelde, Flushing, 1916). Displacements: about 190 tons *on surface*; 230 tons *submerged*. Dimensions: $112\frac{1}{2} \times 12 \times 9\frac{1}{2}$ feet. **3**—17·7 inch torpedo tubes. 1 set of 6-cyl. M.A.N. Diesel engines = 12 kts. *on surface*; *submerged* speed, 8·5 kts. Endurance as **O7** above.



4 *Holland* type: **O2** (1911), **O3** (1912) (**O4** and **O5** (both 1913). All built by K. M. de Schelde, Flushing. Displacements: 130 tons *on surface*, 150 tons *submerged*. Dimensions: $98\frac{1}{4} \times 9\frac{1}{2} \times 9$ feet. Armament: **2**—17·7 inch tubes (a spare torpedo carried for each). Machinery: 1 set 6-cyl. M.A.N. Diesel engines = 12 kts. *on surface*. *Max. submerged* speed 8½ kts. Endurance: 500 miles at 10 kts. *on surface*; 3 hours continuous running at 8½ kts. *submerged*.

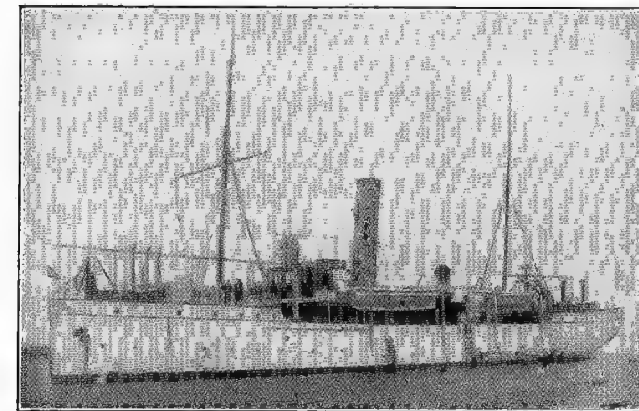
Note.—**O2** will be scrapped shortly.

Sloops (*Flottieljeveraartuigen*).

SOEMBA. East Indies Marine. 1926 Photo, by courtesy of Chief of Naval Staff.

FLORES (15th Aug., 1925), **SOEMBA** (24th Aug., 1925). Built at Rotterdam by M. Feijenoord and Wiltons, respectively. Displacement: 1676 tons. Dimensions: $248 \times 37\frac{1}{2} \times 11\frac{1}{2}$ feet. Guns: **3**—5·9 inch, **1**—3 inch AA., **6** M.G. Machinery: **2** sets Diesels, combined H.P. 2000 = 15 kts. **4** Yarrow boilers. Oil: 195 tons. Complement, 132.

Note.—These Vessels, which are intended for the defence of the Minefields at Surabaya, have 1" armoured deck and C.T. They are fitted with Flettner rudders, and have accommodation for a seaplane.

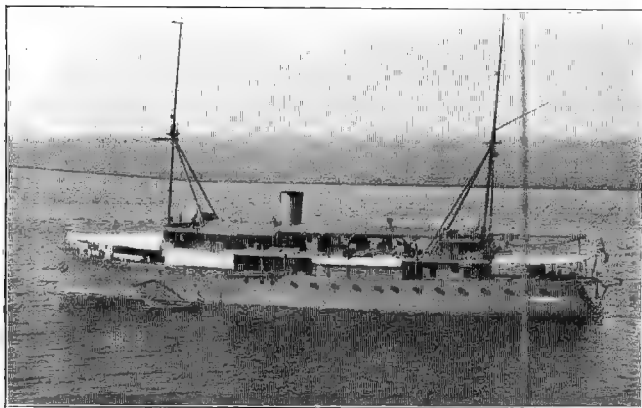


(East Indies Marine.)

KOETEI (1898), 790 tons; Dimensions: $173\cdot2 \times 31\cdot2 \times 12$ feet *average*. Armament: **2**—4·1 inch, **1**—9 pdr. mortar, **4**—1 pdr. H.P. 1350—1400 = 13½ kts. Coal: 140—150 tons. Complement, 100 (55 Europeans, 45 natives).

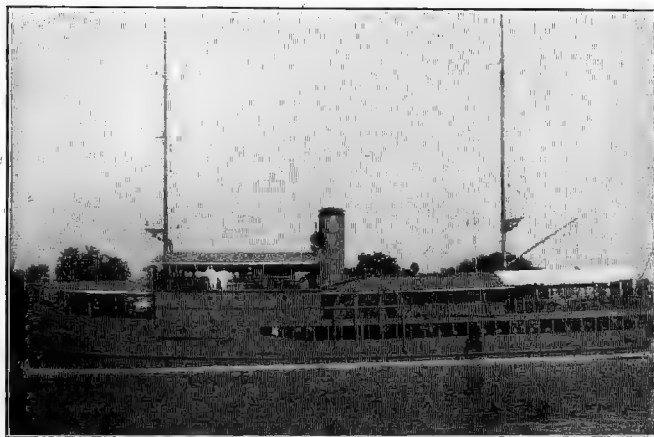
NETHERLANDS—Miscellaneous.

Mine Layers (*Mijnenleggers*). East Indies Marine.



KRAKATAU refitted. 1929 Photo, by courtesy of Chief of Naval Staff.

KRAKATAU (Surabaya D.Y., 1924). Displacement, 1,100 tons. Dimensions: $213 \times 34\frac{1}{2} \times 10\frac{1}{2}$ feet. Guns: 2—3 inch A.A., 4 M.G. H.P. 2500=17 k's. (*trials*). Complement, 80. Can carry 150/200 Mines. Reconstructed 1928, after funnel being removed.

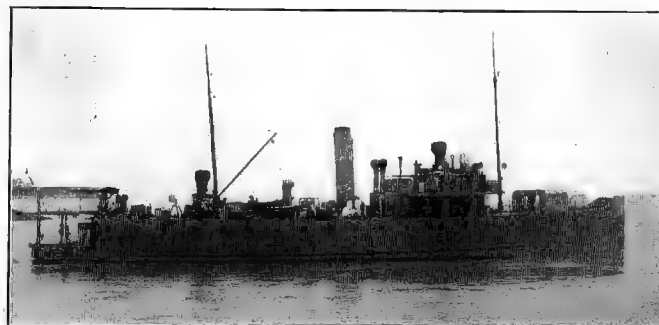


PRO PATRIA. 1926 Photo, by courtesy of Chief of Naval Staff.

PRO PATRIA (Surabaya D.Y., July 21, 1922). Displacement, 612 tons. Dimensions: $154 \times 28\frac{1}{2} \times 9\frac{1}{4}$ feet. Guns: 1—3 inch A.A., 2 M.G. H.P. 650 = 10 kts. Reported to carry 80 mines of the latest type.

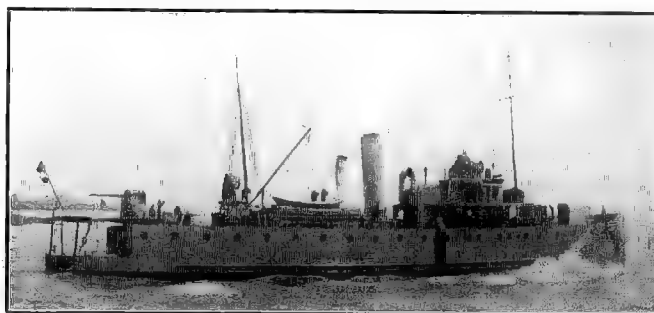
MISCELLANEOUS SHIPS.

Mine Layers—continued.



DOUWE AUKES.

1926 Photo, R. F. Schellena, Esq.



VAN MEERLANT.

1926 Photo, by courtesy of Chief of Naval Staff.

VAN MEERLANT (Nov. 24th, 1920), **DOUWE AUKES** (Feb. 23rd, 1922). First built under 1917 Naval Programme and the second under 1918 Naval Programme, by Werf Gusto, Schiedam. 748 tons. Dimensions: $180\cdot5 \times 28\cdot5 \times 10\cdot4$ feet. Guns: 3—13 pdr. semi-auto. "No. 4." Twin screws. Engines: 2 sets triple exp. surface condensation. I.H.P. 1200=13 kts. Coal: 80 tons. Complement, 60.

Of the same type as *Hydra* and *Medusa* (see next column), but faster and carry 60 mines. 2 steam winches for handling mines and double laying gears.

Mine Layers—continued.



1918 Photo, Fotopersbureau "Holland."

HYDRA (1911) & **MEDUSA** (1913). Both built at Amsterdam D.Y. 670 tons. Complement 53. Dimensions: $163 \times 29\cdot5 \times 9$ feet. Guns: 3—13 pdr. S.A. "No. 2" 1—1 pdr., 1 M.G. Designed H.P. 800=11·5 kts. Coal: 72 tons. Radius of action: 1440 miles at 6 kts. Each carries double laying gears for 70 mines.

Note.—*Hydra* sank off the "Wielingen" Light Ship by collision with T.B. Z 3, Feb., 1921; salvaged April, 1921 and again in service.

Special Note.

Fishery Protection Vessel *Nautilus* (described on a subsequent page) is fitted for minelaying.

(Continued on next page.)

Mine Layers—continued.



(East Indies Marine.)

HERKULES (Surabaya D.Y., 1909). Tug of 234 tons. Dimensions: 102·8 × 13·4 × 8·4 feet. Guns: 1—1 pdr. 20 mines carried. I.H.P. 400=10·2 kts. 1 screw. Oil fuel: 45½ tons=2218 miles at 10 kts. Complement, 17.



SIBOGA.

(East Indies Marine.)

ASSAHAN* (1900), 800 tons; **SERDANG*** (1897), 820 tons; **SIBOGA*** (1898), 790 tons. About 173·2 × 31·2 × 12 feet average. Armament: 1—4·1 inch, 1—9 pdr. mortar, 4—1 pdr. I.H.P. 1300 to 1400=13 to 14 kts. Coal: 130–150 tons. Complement: 100 (55 Europeans, 45 natives).

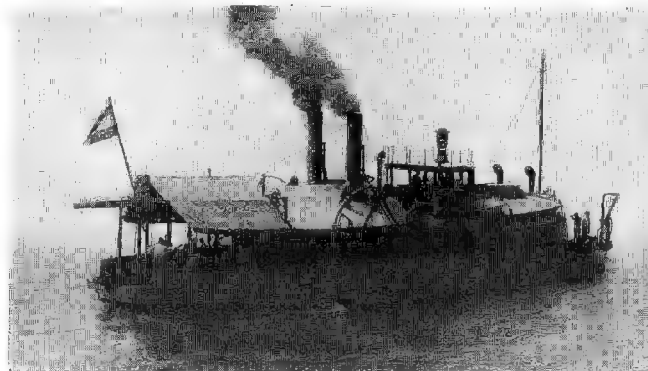
* Originally sisters to *Koetei* but on conversion to Mine Layers appearance of above three ships was considerably altered. Recently these vessels have also been employed as seaplane tenders.

TRITON (N. Shields, 1905). Ex-trawler of 477 tons. Complement, 34. 120·5 × 21·5 × 11·6 feet. Guns: 2—1 pdr., 1 M.G. I.H.P. 412=10·2 kts. Coal: about 140 tons. Double laying gear for 30 mines.

MISCELLANEOUS SHIPS.

Mine Layers—continued.

VULCANUS (Grimsby, 1902). Ex-steam trawler *Dolfijn*, 410 tons. Complement, 34. 123·7 × 21·6 × 10·5 feet. Guns: 3—1 pdr., 1 M.G. H.P. 275=10 kts. Coal: about 140 tons. Double laying gear for 30 mines.



1920 Photo, R. F. Schellema, Esq.

THOR (1877), **BALDER** (1878), **VIDAR**, **BULGIA** and **HADDA** (1879), ex-gunboats of 270–280 tons. Complement 34–36. Carry 19 mines each (double mine-laying gear). Guns: 2—4 pdr. (semi-auto.) in *Balder* and *Hadda*, 2—1 pdr. in *Vidar* and *Thor*; 1 M.G. in all four. Speed: 7 kts. Coal: 30 tons. Double mine laying gears in all for 30 mines;

And of similar appearance:

HAVIK (1875). Ex-gunboat of 210 tons. Guns: 2—1 pdr., 1 M.G. Speed: About 6½–7 kts. Complement, 32. Coal: 18 tons. All these old vessels used for Harbour Training Service. Can carry 24 mines.

Mine Sweepers. (*Mijnenvoegers*.)

New Construction.

4 Minesweepers (for service in E. Indies) laid down at Willemsoord Navy Yard, 1928. Displacement: 191 tons. Dimensions: 140½ × 19½ × 4½ feet. 2 sets Diesel engines. B.H.P. 700 = kts.

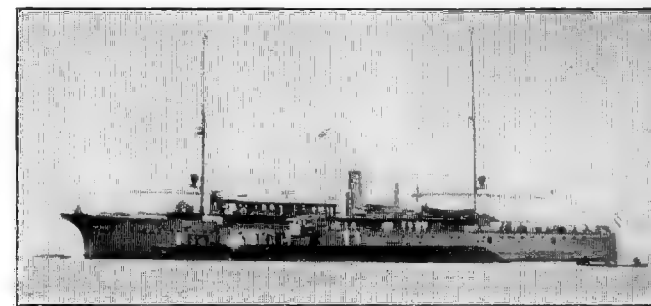


1921 Illustration.

I (Kuyck en van der Ree, Rotterdam), about 300 tons. **II** (Koopman, Dordrecht), 300 tons. **III, IV** (v.d. Schuigt, Papendrecht), both 275 tons. Completed and taken over in 1918. Steel. Dimensions: (*I*) 92·5 × 20·6 × 9·6 feet; (*II*) 100·7 × 20·5 × 10·2 feet; (*III* & *IV*) 90·2 × 20 × 8·2 feet. Guns: 1 machine. Complement, 16. No more details available.

Miscellaneous—NETHERLANDS

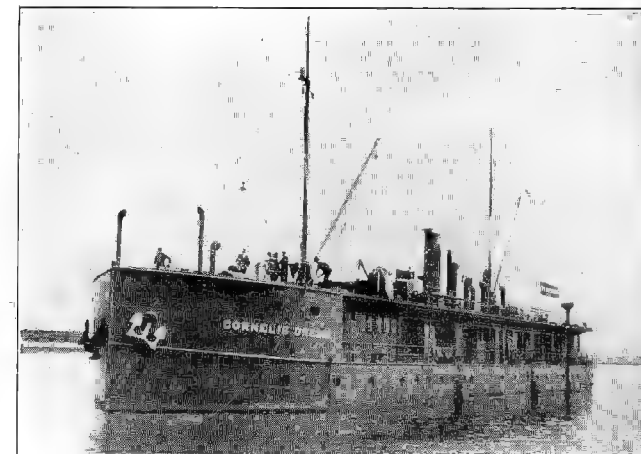
Submarine Depot Ships (*Depotschepen voor Onderzeebooten*).



1925 Photo, R. F. Schellema, Esq.

(East Indies Marine.)

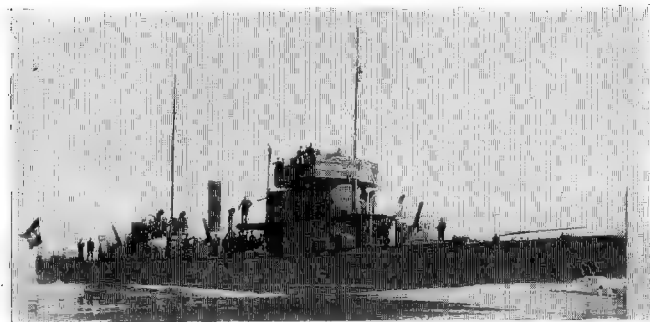
PELIKAAN (Nederland S. B. Co., Amsterdam, Dec. 31st, 1921). 2487 tons. Dimensions: 307 (o.a.) × 42½ × 13 feet. Guns: 4—3 in. (semi-auto) "No. 4," 4 M.G. M.A.N. Diesel Engines. H.P. 1400=12 kts. (electric drive). 2 screws. Oil fuel: 500 tons. Complement, 92. Provided for by 1918 Naval Programme. To carry 2 aeroplanes, stores for 6 submarines, and crews for 4 submarines. Workshops fully equipped for all ordinary repairs. Laid down, 1919; completed, 1922. 4 planes added to equipment since completion.



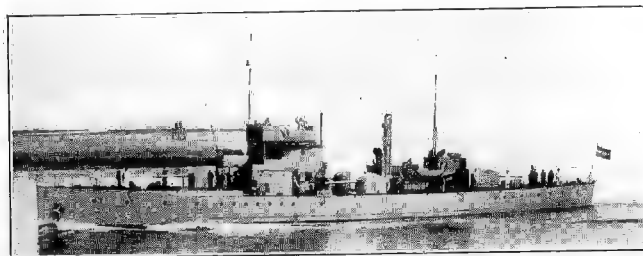
1918 Photo, Fotopersbureau, "Holland."

CORNELIS DREBBEL (1915). 800 tons. Dimensions: 166·8 × 32·8 × 6·8 feet. Guns: 1—1 pdr. Diesel engines. B.H.P. 170=6 kts. Oil fuel: 71 tons. Complement, 73.

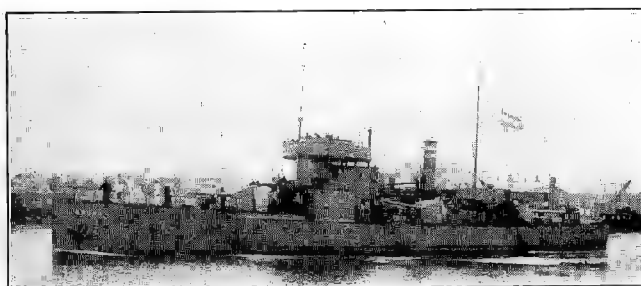
"Armoured" Gunboats (*Pantserbooten*)



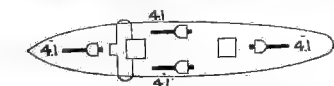
1921 Photo, R. F. Schelltema, Esq.
BRINIO. Ventilators used as stanchions to forebridge. Small uncapped funnel.



FRISO. Thin and tall funnel.



GRUNO. Capped funnel and ensign gaff to mainmast.



BRINIO (1912), **FRISO** (1912), **GRUNO** (1913). All built by Amsterdam D.Y. 540 tons. Complement 52. Dimensions: 172.2 (o.a.) × 27.9 × 9.1 feet *max.* draught. Armament: 4—4.1 inch semi-automatic, 2 machine. Armour: 2" Belt, $\frac{3}{8}$ " Deck, 2" Conning tower. Machinery: 2 sets Diesel engines (Germania, M.A.N., or Werkspoor types). B.H.P. 1200=14 kts. Oil, 34 tons. These vessels are intended to guard mine fields.

MISCELLANEOUS SHIPS.

Surveying Vessels (*Opnemingsvaartuigen*).

(East Indies Marine.)

WILLEBRORD SNELLIUS (Feijenoord Co., Aug. 14th, 1928). Displacement: 1134 tons. Dimensions: 190 (p.p.), 203½ (o.a.) × 31½ × 11½ feet. H.P. 525 = 10.5 kts. Oil: 170 tons. Guns: 1—3.5 inch, 2 M.G. Complement, 85.

EILERTS DE HAAN (25th June, 1919). Feijenoord Co. Rotterdam. 350 tons. Dimensions: 147.3 × 21.9 × 7 feet. No guns. Designed H.P. 600 = 12 kts. Coal: 4½ tons. Complement, 18. Begun under 1915 Naval Programme. Completed May, 1921.

HYDROGRAAF (1911). 300 tons. Dimensions: 132.7 × 21.9 × 9.6 feet. Guns: none. I.H.P. 360=9 kts. Coal: 30 tons. Complement, 18.

(East Indies Marine.)

TYDEMAN (Surabaya D.Y., 1916). 1320 tons. Dimensions: 226.4 × 32.8 × 11.8 feet. Guns: none. I.H.P. 814=10 kts. 1 screw. Coal: 194 tons. Complement, 104.

(East Indies Marine.)

VAN DOORN (1901). Composite and zincd. 700 tons. Complement, 83. H.P. 390=10 kts. Coal: 110 tons.

Fishery Protection Vessel.

NAUTILUS (Oct. 30th, 1929). Built by Rotterdam Dry Dock Co. Displacement: 940 tons. Dimensions: 180½ (p.p.), 191½ (o.a.) × 31 × 11½ feet. Guns: 1—3 inch, 2—40 m/m pom-poms. H.P. 1350=14 kts. Oil: 138 tons. Complement, 45. (This vessel is equipped for minelaying.)

Customs Patrol Vessels.

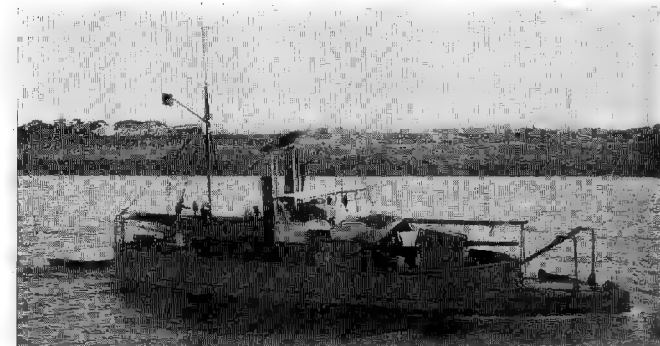
(East Indies Marine.)

AREND (May 21st, 1929), **VALK** (Oct. 19th, 1929). Laid down 1928 by Feijenoord Co., for opium smuggling prevention in E. Indies. Displacement: 985 tons. Dimensions: 236½ × 29½ × 9 feet. H.P. 3350=18 kts. Guns: 2—3 inch. May carry a seaplane each.

Note.—Meaning of these names is "Eagle" and "Falcon."

Old Gunboats:

(Mostly employed as Harbour Tenders, or for Training purposes.)



HEFRING.

1921 Photo, R. F. Schelltema, Esq.

BRAGA, HEFRING, NJORD, THIR, FREIJR. Are old iron twin-screw Gunboats, built 1876-79. 280 tons (*Heffring* and *Njord*=270 tons). Complements, 34-30. Dimensions: 91.5 to 91.8 (o.a.) × 26.9 × 7.8 to 8.1 feet (*max.* draught). Guns: In *Braga*, *Heffring*, *Tyr*, 1—4.7 inch "No. 3" or "No. 1," 2—1 pdr., 1 machine; in *Njord*, 1—5.9 inch "No. 2," 3—1 pdr. In *Freijr*, 1—5.9 inch "No. 1." H.P. 100 to 170=7½ to 8½ kts. Coal: 30 tons.

Training Ships.

(For Gunnery.)

Ex-Cruiser **GELDERLAND** (1898). 4030 tons. Guns: 8—4.7 inch. Is officially rated among "Training, Accommodation and Guard-ships" and considered as non-effective for war duties.

Also

Sperwer (old Gunboat, 1875). 210 tons. Guns: 1—13 pdr., "No. 2," 3—1 pdr., 1 M.G. Speed: 7 kts.

Vessels in Dutch East Indies.

It should be carefully noted that there are three separate Naval Forces on this Station, viz. :—

1. East Indies Squadron. Consists of ships sent out from Netherlands for service on this Station. Now on Station :—*De Zeven Provinciën*, *Sumatra*, *Java*, and destroyers of *Wolf* and *De Ruijter* classes.
2. East Indies Marine (*Indische Militaire Marine*). This, as well as the vessels of the East Indies Squadron, comes under the orders of the Naval C.-in-C., East Indies Squadron, and sometimes combines with that Squadron for exercises and training. Consists of the three sloops, *Flores*, *Soemba* and *Koetei*, 6 Minelayers: *Herkules*, *Pro Patria*, *Krakatau*, *Assahan*, *Serdang*, *Siboga*, 3 torpedo boats of the *Draak* class, Depot Ship *Pelikaan*, all Submarines bearing index letter K, C.M.B.'s, and surveying ships *Tydemann*, *van Doorn*, *W. Snellius*.

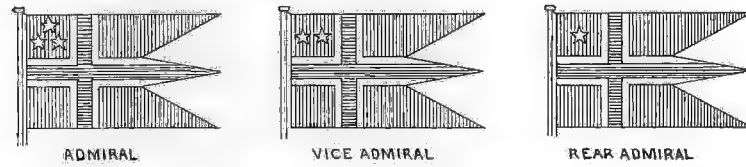
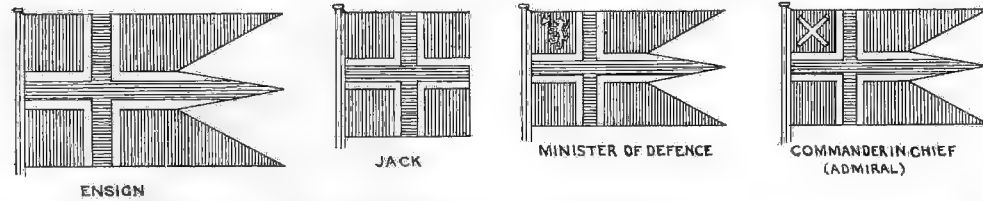
All these ships described on this and preceding pages.

3. East Indies Government Vessels, the property of the East Indies Government. Are used for Customs and Police Duties, &c. Some vessels armed with 4 and 1 pdr. guns. No full list of these craft available to date, but they include Cable Ships *Telegraaf* (1899), of 1500 tons gross, and *Zuiderkruis* (1923), 2200 tons gross.

ROYAL NORWEGIAN NAVY.

Flags, Uniforms, Silhouettes—NORWAY

(Revised, 1929, from information supplied by courtesy of H. E. the Minister of Defence.)



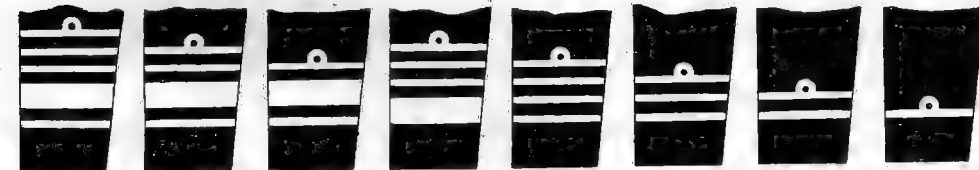
COASTAL DEFENCES (FORTRESS ARTILLERY)



ROYAL STANDARD

* FORTRESS ARTILLERY

COLONEL 3 STARS
LT. COLONEL 2
MAJOR { WHEN IN COMMAND } { 1 NO STAR



Amiral. Vice-Am. Kontre-Am. Kommandör. Kommandör-Kaptein. Kaptein. Premier-Löjtnant. Sekond-Löjtnant.

Admiral. Vice-Ad. Rear-Ad. Commodore. Captain. Commander. Lieut-Com. & Lieut.

In relative rank Engineers have the same without curl.

" " Doctors " " " and a red passe poil above upper stripe.

" " Paymasters " " " " blue " " "

General Notes.—Personnel: About 1050 permanent, 1000 yearly conscripts, all seafaring men in reserve.

Mercantile Marine.—(From "Lloyd's Register," 1929). Total gross tonnage, 3,224,493.

Modern Guns (Armstrong and Bofors).

(Details officially revised 1920.)

Notation.	Designation		Length in calibres	Model.	Weight of Gun.	Weight of A.P. shot.	Initial velocity	Max. penetration firing A.P. capped at K.C.		Danger Space against average warship, at			Nom. Rounds per minute.
								5000 yards.	3000 yards.	10,000 yards.	5000 yards.	3000 yards.	
MEDIUM.	c/m.	inches.			tons.	lbs.	ft. secs.						
	20.9	8.2	44	A	18½	309	2300	6½	9¼	100	405	594	4
	14.91	5.9	46	A	7	100	2625	3	4½	67	215	440	8
LIGHT.	12	4.7	44	A	2¾	44	2570	...	...	...	...	...	10
	10.16	4	40	B	2	32	2545	...	...	...	...	...	20
	7.6	3	50	B	½	12	2820	...	...	...	...	...	...
	7.6	3	40	A	¾	12	2210	...	...	...	...	...	...
LIGHT.	7.6	3½	25	B	¾	12	1630	...	...	...	...	...	...

* B=Bofors.

A=Armstrong.

† Anti-Aircraft.

There are also a 3 pdr. AA. gun and a 9 pdr. gun.

Minister of Defence.—Mr. M. A. Ryst.

Chief of Naval Staff.—Commodore P. Rolfsen.

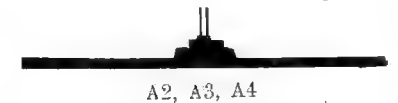
Naval Attaché, London.—Commander H. F. Dons.

Colour of Ships: Coast Defence Ships, Destroyers, Torpedo Boats, Gunboats, &c., all light grey.

Scale: 1 inch = 160 feet.



SUBMARINES. Scale 1 inch = 80 feet.



Snogg class t.b. (3).

Draug class t.b.d. (3.)

B1—B6.

NORWAY—Battleships.

COAST DEFENCE BATTLESHIPS. (*Panserskibe*.)



Note.—3 pdr. AA. gun now mounted on each turret and masts lowered, as in plan. 1918 Photo, Wilse, Oslo.

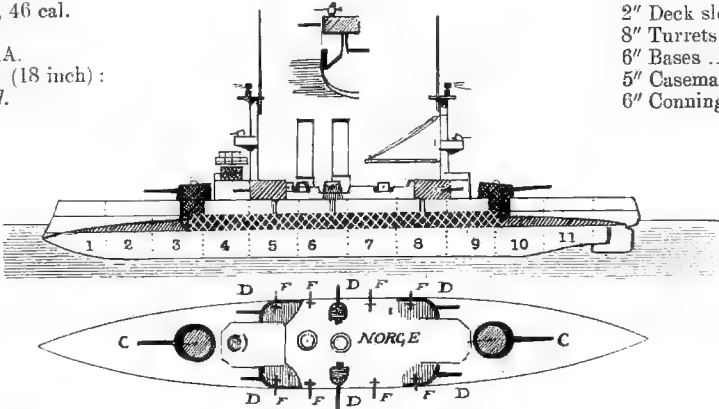
NORGE (March, 1900), EIDSVOLD (June, 1900).

Displacement, 4166 tons. Complement, 270.
Length (p.p.), 290 feet. Length (over all), 301½ feet. Beam, 50½ feet. Max. draught, 17½ feet.

Guns :
2—8·2 inch, 44 cal.
6—5·9 inch, 46 cal.
8—12 pdr.
2—3 pdr. AA.
Torpedo tubes (18 inch) :
2 submerged.

Armour (Krupp) :
6" Belt.....
2" Deck slopes ...
8" Turrets
6" Bases
5" Casemates (NC)
6" Conning tower

Ahead :
1—8·2 in.
2—5·9 in.



Astern :
1—8·2 in.
2—5·9 in.

Machinery : 2 screws. Boilers : 6 Yarrow. Designed H.P. 4500=16·5 kts. Coal : normal 440 tons ; maximum 550 tons.

Notes.—Built by Armstrong. Completed 1900–1901. Machinery by Hawthorn, Leslie & Co. Excellent seaboats, and still good for 15 kts. On plans C=8·2 inch guns ; D=5·9 inch ; F=12 pdr. guns.



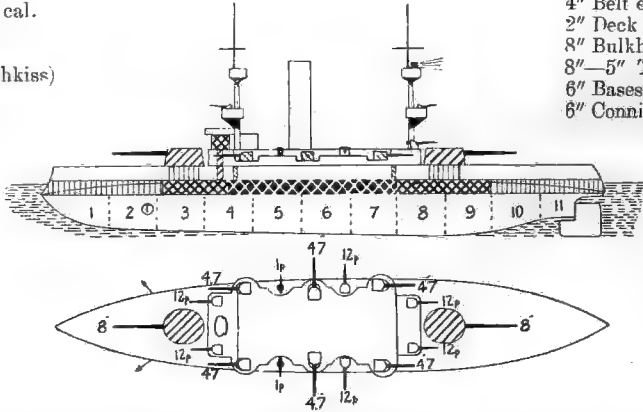
TORDENSKJOLD. June, 1927, Photo, H. C. Bywater, Esq.

HARALD HAARFAGRE (Jan., 1897), TORDENSKJOLD (March, 1897).

Displacement, 3858 tons. Complement, 249.
Length (p.p.), 279 feet. Length (over all), 304 feet. Beam, 48½ feet. Maximum draught, 17½ feet. Mean draught, 16½ feet.

Guns (Armstrong) :
2—8·2 inch, 44 cal.
6—4·7 inch, 44 cal.
6—12 pdr.
2—3 pdr. AA.
2—1 pdr. (Hotchkiss)
Torpedo tubes* :
2 submerged.

Armour (Harvey) :
7" Belt (amidships)
4" Belt ends
2" Deck (flat on belt)
8" Bulkheads
8"—5" Turrets ...
6" Bases of turrets
6" Conning tower



Ahead :
1—8·2 in.
2—4·7 in.

Astern :
1—8·2 in.
2—4·7 in.

Machinery : Boilers : 3 cylindrical. 2 screws. Designed H.P. 4500=16·9 kts. (made 17·2 on trial, 1897-8). Coal : normal 400 tons ; maximum 540 tons.

Notes.—Built by Armstrong, and completed 1897-8. Engines by Hawthorn, Leslie & Co. Belt is 174 feet long by 6½ feet deep. Excellent seaboats, good for 14 kts. still.

* Tubes are 18 inch in *H. Haarfagre* and 17·7 inch in *Tordenskjold*.

Note.—*Tordenskjold* is employed as Cadets' Training Ship.



3 Destroyers (*Torpedobaatsjagare*).

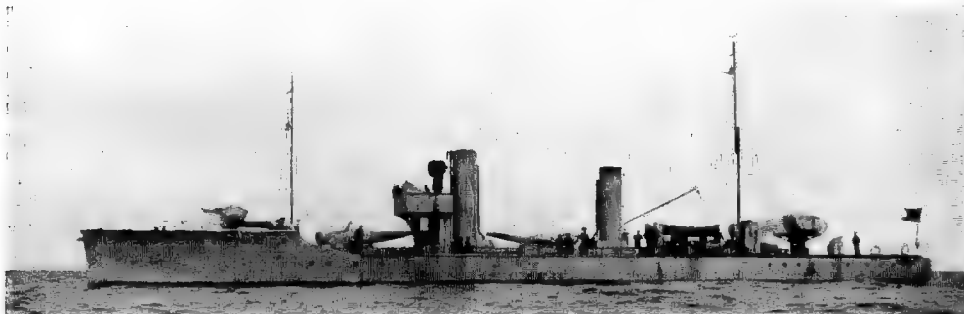


Fore funnel reported lengthened in one (or more) boats.

Garm (1913), **Draug** (1908), and **Troll** (1910). All built at Horten. 540 tons. Dimensions: 227 × 23½ × 8½ feet. Armament: 6—12 pdr., 3—18 in. tubes. H.P. 7500 (8000 in *Garm*)=27 kts. Reciprocating engines in last two, turbines in *Garm*. Coal: 95 tons. Complement 76.

26 Torpedo Boats.

"Large Torpedo Boats" (*Større Torpedobaater*).



TRYGG.

1921 Photo, by courtesy of the Ministry of Defence.

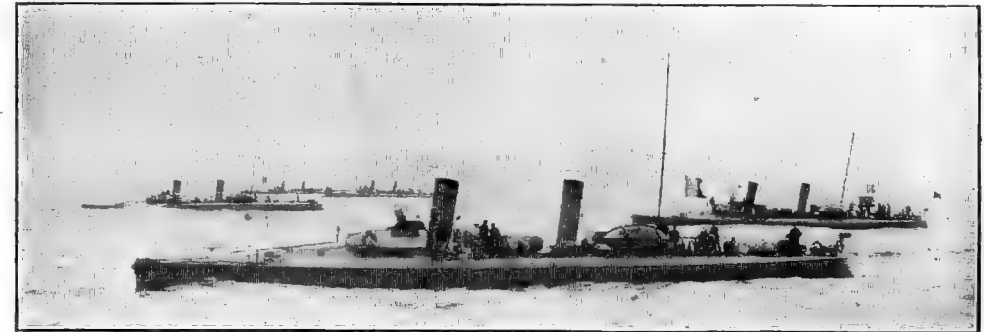


Plan by courtesy of Ministry of Defence.

3 boats: **Snogg**, **Stegg**, **Trygg** (Horten, 1916-17). 220 tons. Dimensions: 173.9 × 18 × 5.2 feet. Guns: 2—12 pdr. Tubes: 4—18 inch. Designed H.P. 3500=25 kts. Fuel capacity: 30 tons coal and oil. Complement, 33.

Note.—As the result of alterations these three vessels are now reported to be quite satisfactory sea boats.

1st Class Torpedo Boats (*Torpedobaater av I Kl.*).

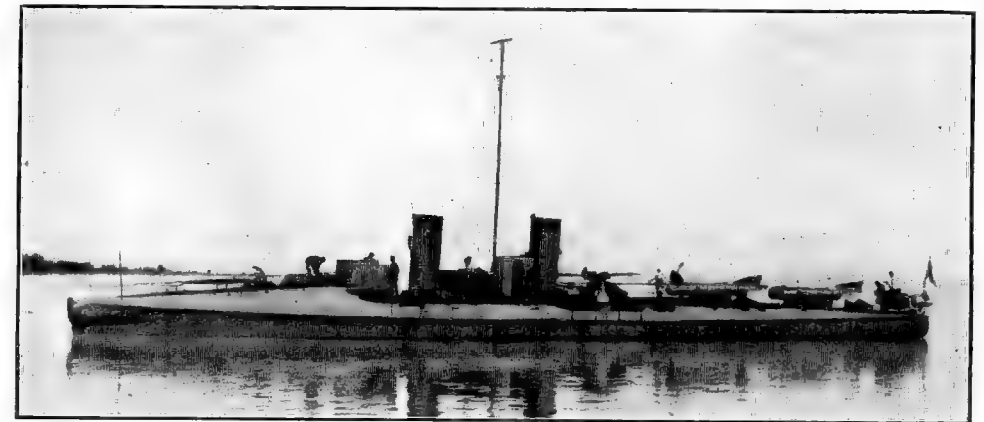


8 boats: **Laks**, **Sild**, **Sael**, **Skrei** (1900). 90 tons and 21 kts.
Brand, **Storm**, **Trods** (1899). 20 kts. } 79 tons.
Hval (1896). 19 kts.

1918 Photo, Wilsø, Oslo.

All armed with 2—1 pdr. guns and 2—18 inch tubes on deck. Complement, 19. Last two built by Schichau, Elbing. Others by Karl-Johansverns Verksted, Horten. H.P. 1000. Coal: 17 tons.

2nd Class Torpedo Boats (*Torpedobaater av II Kl.*).



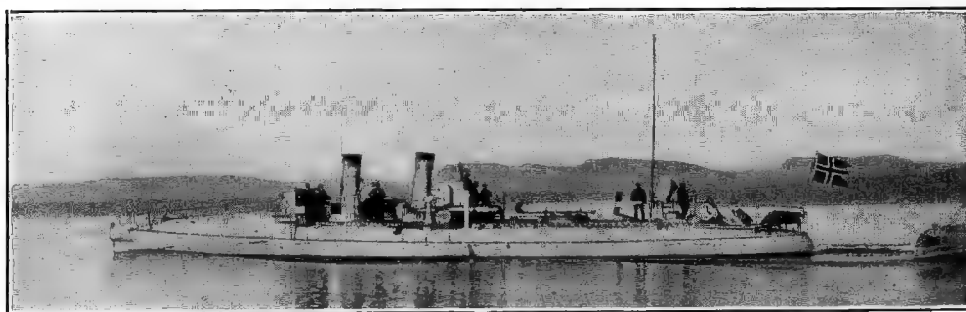
SKARV.

1925 Photo, by favour of the Ministry of Defence.

3 boats: **Kjell** (1912), 94 tons; **Skarv**, **Teist** (Karl-Johansvern, Horten, 1907-08). 92 tons. *Skarv*, *Teist*, 2—3 pdr. guns. *Kjell* 1—12 pdr. In all three boats, 3—18 inch tubes, one bow, and two deck aft. Speed of all three boats, 25 kts. H.P. 1700. Coal: 16 tons. Complement, 21.

(Continued on next page.)

2nd Class Torpedo Boats—continued.

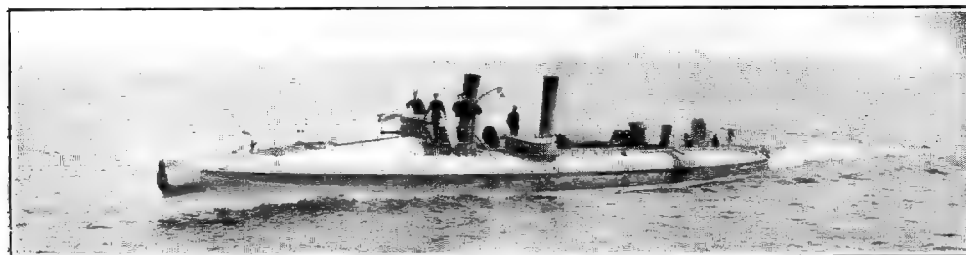


Grib, Jo, Lom, Orn, Ravn, as above photo.

1918 Photo, Wilse, Oslo.

5 boats: **Grib, Jo, Lom** (1906) and **Orn, Ravn** (1904). All 70 tons, and about 22–23 kts. Guns: 2—1 pdr., but *Lom* has 2—3 pdr. Complement, 16.

Note.—All above 5 boats have 2—18 inch tubes, viz., 1 bow and 1 deck. All built in Norway.



1918 Photo, Wilse, Oslo.

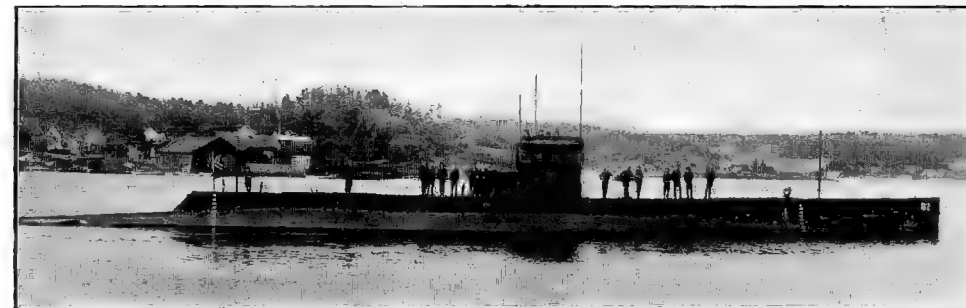
4 boats: **Hawk, Falk** (1903), 63 tons; **Hvas, Kjaek** (1900), 64 tons. All have 2—1 pdr. and 2 tubes (1 bow and 1 deck). First two 20 kts., others 19 kts. Complement, 14. Built in Norway.

(Same appearance as "Hawk," &c., above, but shorter funnels—v. Silhouettes.)

3 boats: **Kvik** (1897-98), 67 tons. **Blink, Lyn** (1896), 45 tons. All three boats 19 kts. speed. Guns: 2—1 pdr. and 2—18 inch tubes (1 bow, 1 deck). Complements: 14 for all. Built in Norway.

Note.—*Djerv* and *Dristig*, of this class, have been removed from Effective List.

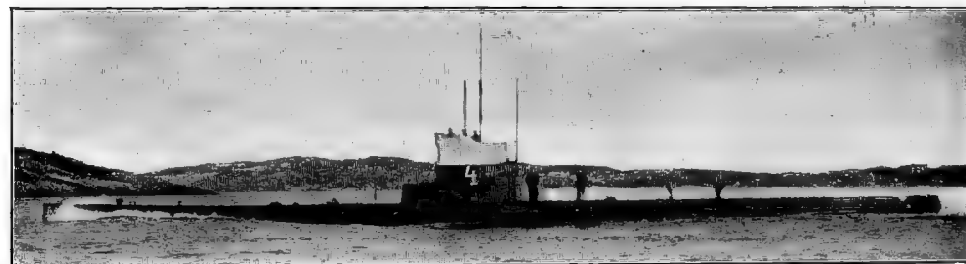
9 Submarines (*Undervandsbaater*).



B 2.

1925 Photo, by favour of the Ministry of Defence.

6 *Holland* type: **B 1** (1923), **B 2** (1 Oct., 1924), **B 3** (1926), **B 4** (1 May, 1927), **B 5** (17 June, 1929), **B 6** (August, 1929), (all built at Horten). 420 tons on surface 545 tons submerged. H.P. 850 = 14 kts. on surface, 500 = 10·5 kts. when submerged. Dimensions: 167½ × 17½ × 11½ feet. Sulzer type Diesel engines, built at Horten. Electric motors built in Norway. Armament: 1—12 pdr., 4—18 inch torpedo tubes (2 bow, 2 stern). Complement, 23. Laid down 1915. *B 1* completed 1923, and reported to have been very successful, maintaining a speed of 14·5 kts. on trial. *B 2* completed in 1924, *B 3* in 1926, *B 4* in 1927. *B 5*, *B 6* both laid down in Dec. 1925, and will be completed in 1929 and 1931 respectively.



A 4.

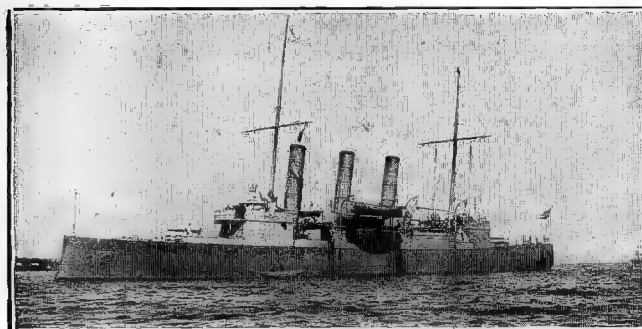
Photo added 1921.

3 *Krupp-Germania* type: **A 4–A 2** (all 1913). 250 tons on surface, 335 tons submerged. H.P. 900 = 14 kts., on surface, 650 = 9 kts. submerged. Complement, 15. Dimensions: 152½ × 16½ × 9½ feet. Surface engines: Krupp-Diesel. 3—18 inch tubes, 1 bow, 2 stern. 4 torpedoes carried.

Note.—*A 5* completing at Kiel, was appropriated by Germany on outbreak of war and became the German *U 4*. Was surrendered at Harwich with other German Submarines; ceded to France for experiments, and demolished at Toulon, 1920-1.

MISCELLANEOUS VESSELS.

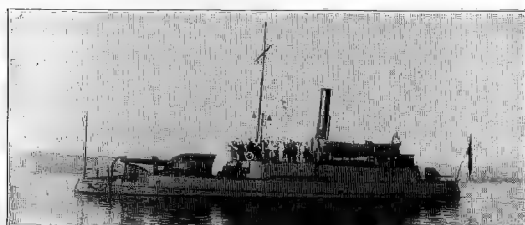
1st Class Gunboat (*Kanonbaater av 1. Kl.*).



1918 Photo, Wilse, Oslo.

FRITHJOF (1895). 1382 tons. Complement 166. Dimensions: $223\frac{1}{2} \times 32\frac{3}{4} \times 13\frac{1}{2}$ feet. Guns: 2—4·7 inch, 4—12 pdr., 4 M.G. Tube (18 inch), 1 sub. (bow). Designed H.P. 2800=15 kts. Coal: 160 tons. Built at Horten.

2nd Class Gunboat (*Kanonbaat av. 2. Kl.*).



Photo, Wilse, Oslo.

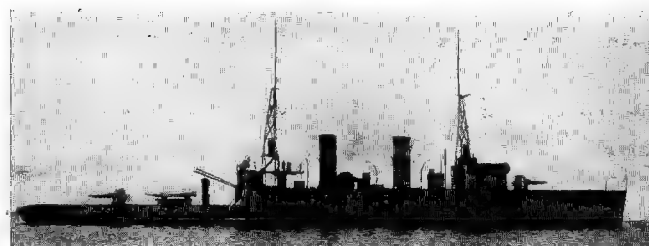
AEGER (1893). 383 tons. Complement 43. Guns: 1—8·2 inch, 1—10 pdr., 2—4 pdr. H.P. 370=9·8 kts. Coal: 25 tons. Max. draught: $7\frac{3}{4}$ feet.

Old Gunboats.

Name.	Date.	Tons.	Crew.	Guns.	Speed kts.
<i>Tyr</i> ...	1888	281	44	1—4·7 in., 1—6, +2—1 pdr.	10·5
<i>Gor</i> ...	1885	276	44	1—10·2 in. 2—12, +2—1 pdr.	10·5
<i>Vidar</i> ...	1884	254	41	1—4·7 in. 1—3, +2—1 pdr.	9·5
<i>Brage</i> ...	1876	254	38		8·5
<i>Nor</i> ...	1878	254	38		8·5
<i>Vale</i> ...	1878	233	41	1—4·7 in. 3—1 pdr.	8
<i>Uller</i> ...	1874				

(All fitted as Minelayers).

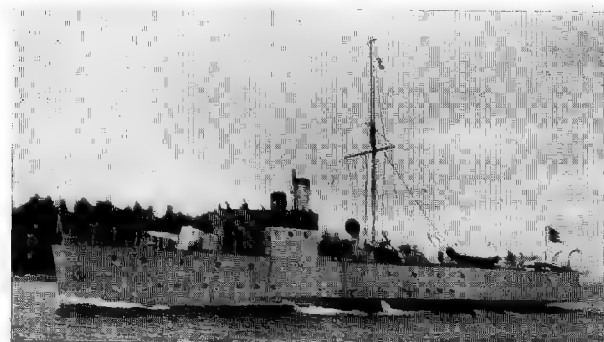
Mine Layers.



FROYA.

1921 Photo, by courtesy of the Ministry of Defence.

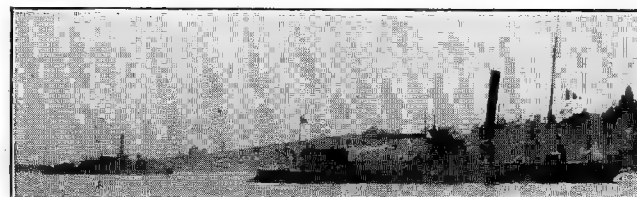
FROYA (1916). 755 tons. Complement, 79. Dimensions: $248·7 \times 27 \times 8·2$ feet. Guns: 4—4 inch. Tubes: 2—18 inch deck. Designed H.P. 7000 = 22 kts. Coal: 95 tons + 60 tons oil. Carries about 200 mines.



GLOMMEN, LAUGEN.

1921 Photo, by courtesy of the Ministry of Defence.

GLOMMEN (1917), **LAUGEN** (1917). Both built at Akers Yard, Oslo. 335 tons. Complement 39. Dimensions: $137·8 \times 27·9 \times 6·2$ feet. Guns: 2—12 pdr. Designed H.P. 170=9·5 kts. Coal: 21 tons. Each carries about 50 mines.



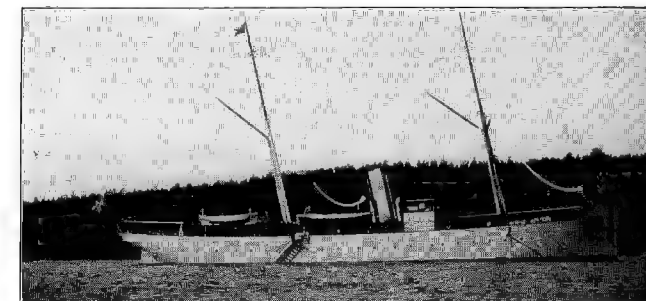
VALE (as Minelayer) on right.

1918 Photo, S. Anderson, Esq.

Miscellaneous—NORWAY

Fishery Protection Vessels.

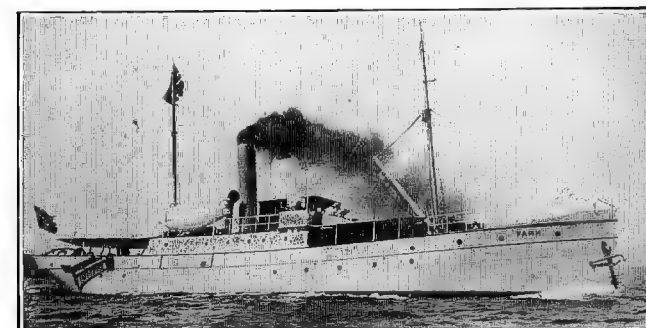
Note.—A new fishery protection vessel is under construction at Horten. 1,000 tons. Complement: 70. Guns: 2—4 inch. Speed: 15 kts.



Photo, Wilse, Oslo.

HEIMDAL (1892). 640 tons. Complement 62. Length, 181 feet. Draught, 13 feet. Guns: 4—12 pdr., H.P. 625=12 kts. Coal: 92 tons.

Transport (*Transportskib.*)



1918 Photo, Wilse, Oslo.

FARM (1900). 300 tons. Complement: 32. Guns: 2—9 pdr., 2—1 pdr. Speed: 10 kts.

Submarine Depot Vessel.

SARPEN (1860). (Rebuilt, 1918). 187 tons. Guns: 2—9 pdr., 1—1 pdr. Speed: 9 kts.

PERU.

PERUVIAN FLEET.

Officially Revised by courtesy of the Director del Material, Ministry of Marine, Lima, 1929.

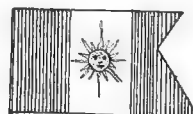


PERU ENSIGN

Mercantile flag the same but without centre device.

Colour of Ships: Grey.

Rear-Admirals' flag similar to ensign but has a sun in place of arms in centre.



PERUVIAN CAPTAIN

Minister of Marine: Señor Nuñez Chavez.

Naval Attaché (London): Commander Manuel D. Faura.

There is at present an American Naval Mission in charge of the re-organisation of the Peruvian Fleet, under Captain William S. Pye, U.S.N., with rank of Rear-Admiral, (Peruvian).

Uniforms. (Device within circle is a radiant sun.)

As Contra-Almirante, but with 2 thin stripes



Vice-Almirante.
Vice-Admiral.



Contra-Almirante.
Rear-Admiral.



Capitan de Navio.
Captain.



Capitan de Fragata.
Commander Senior.



Capitan de Corbeta.
Commander Junior.



Teniente 1º.
Lieut. Comm'r.



Teniente 2º.
Lieut.



Alferez de Fragata.
Sub-Lieutenant.

All branches have the same stripes, but Doctors have a torch with entwined snakes in place of a radiant sun, and red material between stripes.

Mercantile Marine.

(From "Lloyd's Register," 1929 figures). Total gross tonnage, 62,160.

PERUVIAN RECOGNITION SILHOUETTES.

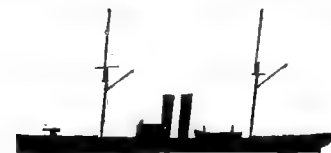
Scale: 1 inch = 160 feet.



C. BOLOGNESI.



A. GRAU.



LIMA (funnels now shortened).



T. RODRIGUEZ t.b.d.

Submarines:—

Cruisers.



CORONEL BOLOGNESI. The A. Grau is identical except that she has a poop.

ALMIRANTE GRAU (March, 1906) & **CORONEL BOLOGNESI** (Nov., 1906).

Displacements: 3,200 tons. Complement, 315.

Length (p.p.), 370 feet. Beam, 40½ feet. Maximum draught, 14½ feet.

Guns (Vickers):

2—6 inch, 50 cal.

8—14 pdr.

Torpedo tubes (18 inch):

2 submerged.

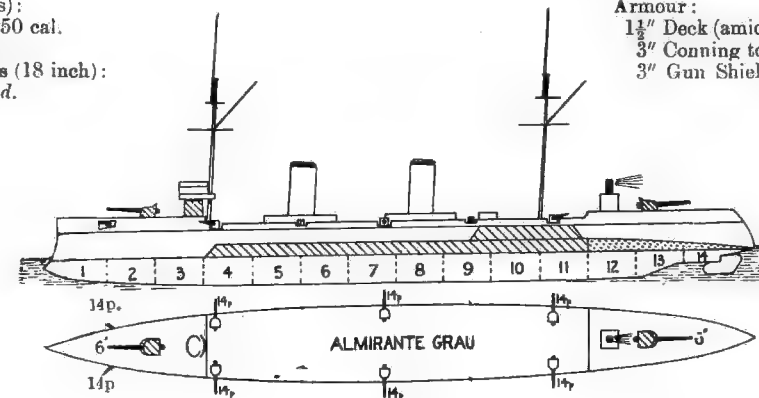
Armour:

1½" Deck (amidships) =

3" Conning tower ..

3" Gun Shields ...

Ahead:
1—6 in.



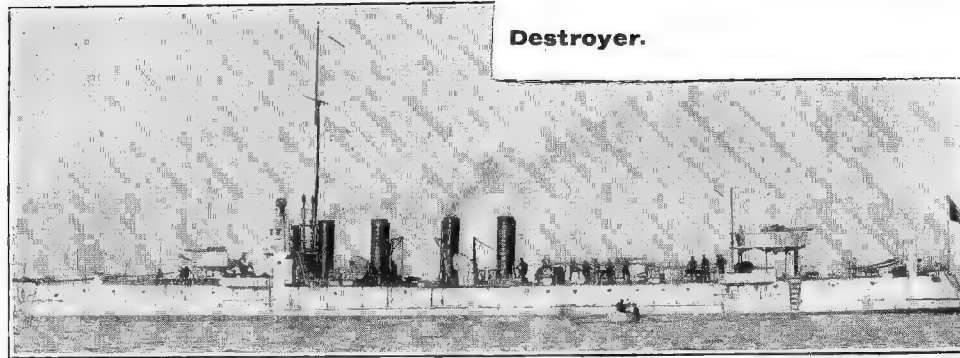
Astern:
1—6 in.

Broadside: 2—6 in.

Machinery: 4 cylinder vertical triple expansion. 2 screws. Boilers: 10 Yarrow (converted to oil burning). Designed H.P. 14,000 = 24 kts. Oil: normal, 500 tons; Endurance: 3,700 miles at 10 kts.

General Notes.—Built and engined by Messrs. Vickers, Ltd., about 1905-7. Refitted at Balboa boilers being re-tubed and modified for oil burning, 1923-25. Both ships are now good for 23-5 kts. at sea. *Grau* is at present employed as fleet flagship.

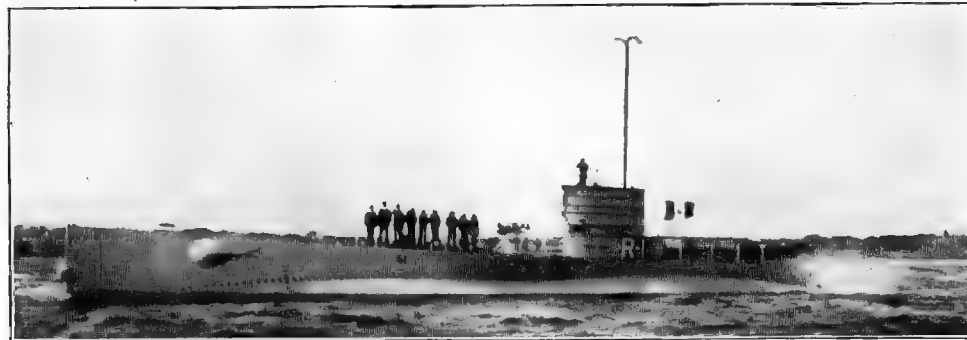
Gunnery Notes.—Italian Giradelli type training indicators are believed to have been added to gunnery equipment.



Destroyer.

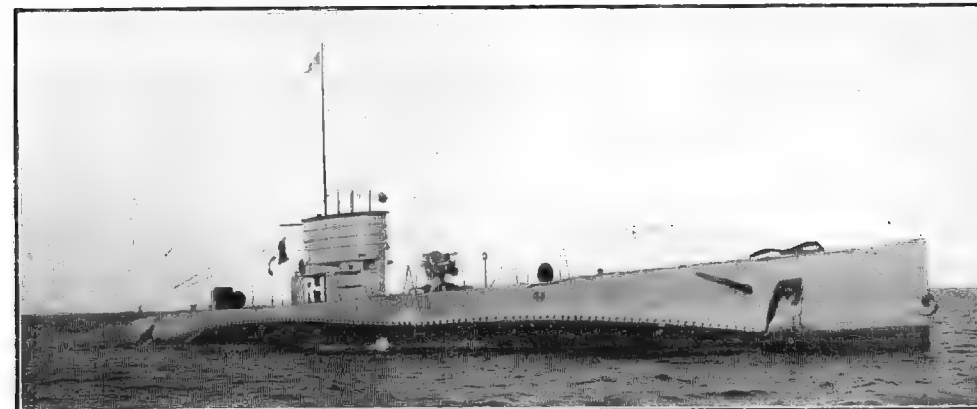
Photo by courtesy of Messrs. Schneider et Cie.
 1 *Schneider-Creusot*:—**Teniente Rodriguez** (1909, ex-*Actée*). 490 tons. Dimensions: 212×21'3×14'1 feet. H.P. 8,600=28 kts. (present best speed 25 kts.). Schneider-Zoelly turbines, du Temple boilers (retubed 1923). Coal: 100 tons = 1200 miles at 10 kts. Armament: 6—3 pdr., 2—18 inch tubes. Complement 60. This vessel is regularly employed in the Training of Cadets.

Submarines.



R 1.

1927 Photo, by courtesy of Electric Boat Co.



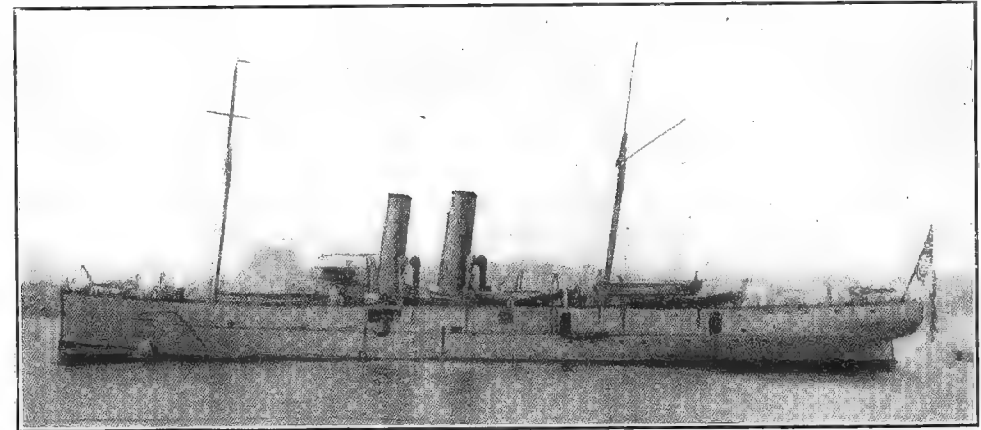
R 1.

6 *Electric Boat Co.* type: **R 1** (April, 1926), **R 2** (May, 1926), **R 3** (April 21st, 1928), **R 4** (May 10th, 1928). Built for contractors (Electric Boat Co.) by New London Ship & Engine Co., of Groton, Conn. Surface displacement, 576 tons. Submerged displacement, 682 tons (exclusive of non-watertight parts), 755 tons (inclusive of such parts). Length, 200 feet. 2 Nelsco Diesel engines, together 880 H.P. = 14.5 kts. Electric motors of 1000 B.H.P. = 9.5 kts. Radius of action: 8000 miles. Guns: 1—3 inch. Tubes: 4—21 inch. (bow). Complement, 30.
 Note.—R 1, R 2, on delivery, completed an unescorted trip from New London to Callao, without mishap, arriving in good order. R 3, R 4 to be delivered in summer of 1928: R 5, R 6 are projected, having been authorised in 1926.

Training Ship.
CONTRAMAESTRE DUEÑAS (ex-*Hebe*, ex-*Vortigern*). Steel 4-masted barque, built by R. Williamson & Son, Workington, 1891. 2469 tons gross. Dimensions: 305½×42½×—feet.

Submarine Depot Ship. (Classed as Cruiser.)
LIMA (Ex *Socrates*, Kiel, 1880). 1790 tons. H.P. 2000=14 kts. Coal: 300 tons. Guns: 3—4 inch, 4—3 pdr. Complement, 150.

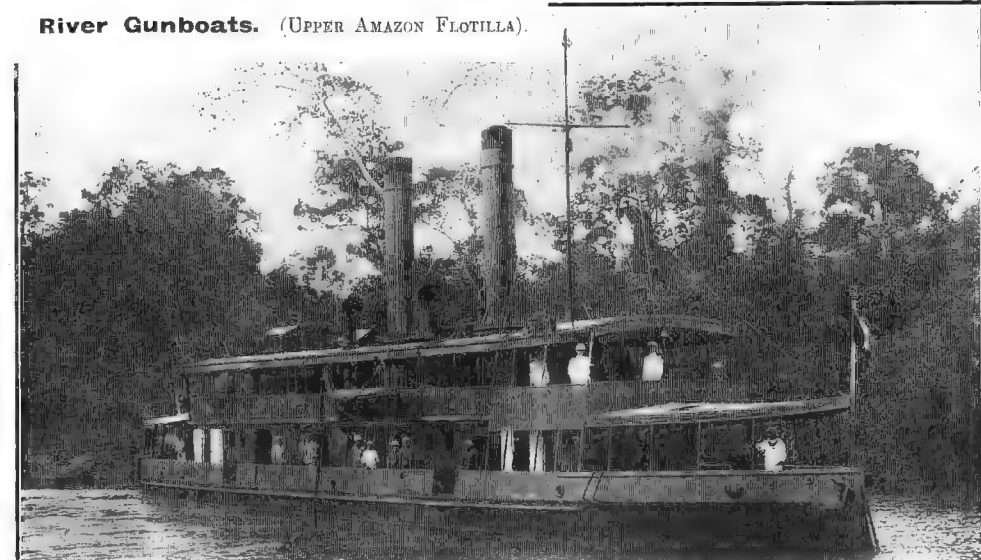
Note.—This Ship was completely refitted 1927-8 and can now make her designed speed. Radius is 3,000 miles at 10 kts.



LIMA.

Photo added 1927.

River Gunboats. (UPPER AMAZON FLOTILLA).



AMERICA.

1927 Photo, by courtesy of Ministry of Marine.

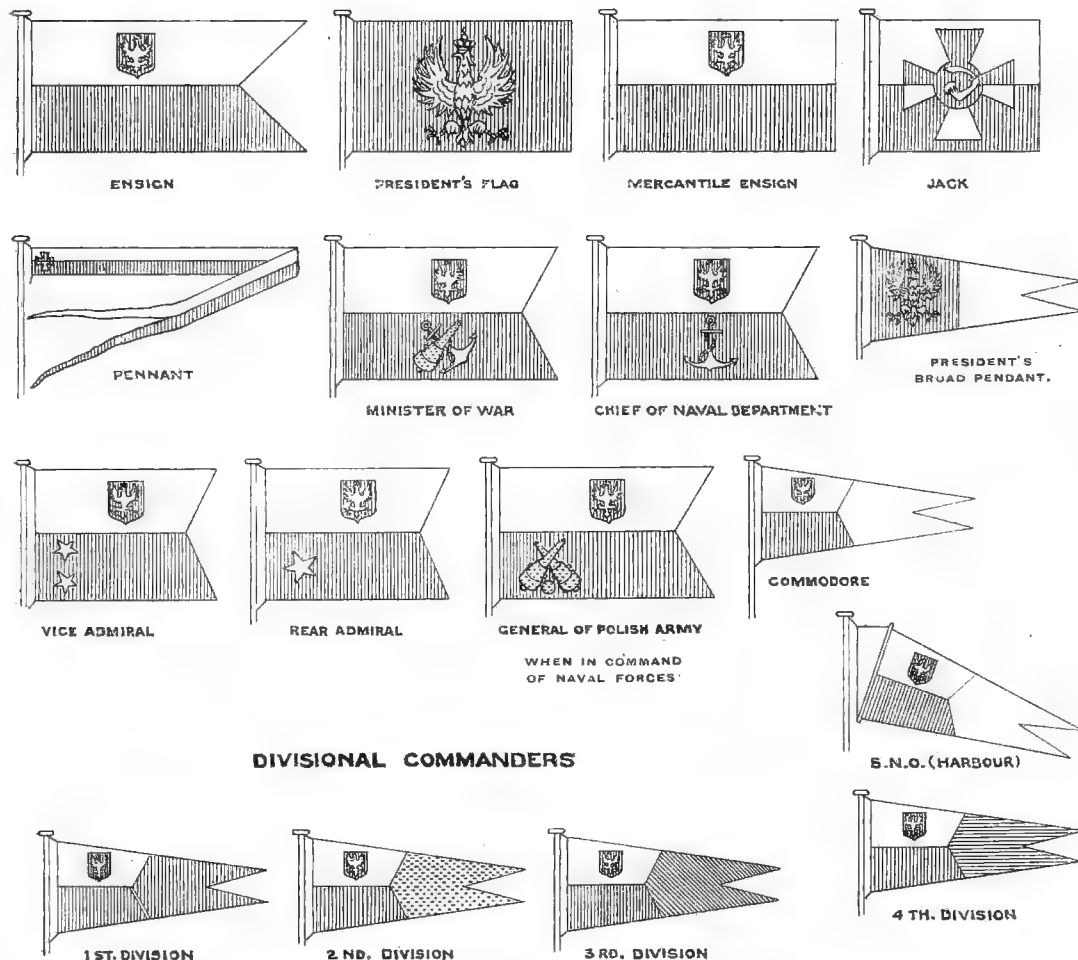
AMERICA (1904). Steel. 240 tons. Dimensions: 133×19½×4½ feet. Guns: 4—3 pdr., 2 M.G. I.H.P. 350 = 14 kts. Coal: 42 tons. Complement,
NAPO (1925). Steel. 57 tons. Dimensions: 100×18×5 feet. Guns: 3—3 pdr. Speed: 12 kts.
IQUITOS (1875). Rebuilt 1896. 50 tons. Dimensions: 77×12×7½ feet. Guns: 1—3 pdr., 2 M.G. Speed: 7.5 kts.

POLAND—Flags, Uniforms, &c.

POLISH FLEET.

Officially corrected, 1927, by courtesy of the Chief of the Staff, Naval Department, Ministry of War, Warsaw.

Flags.



Note.—The Emblem in the centre of the Jack is a flesh-coloured arm holding a steel-blue scimitar with gold hilt. The covering over shoulder of the arm is pale blue and has a gold-tasseled fringe.

Minister of War.—Marshal Pilsudski.

Chief of the Naval Department.—Acting Rear-Admiral G. Swirski.

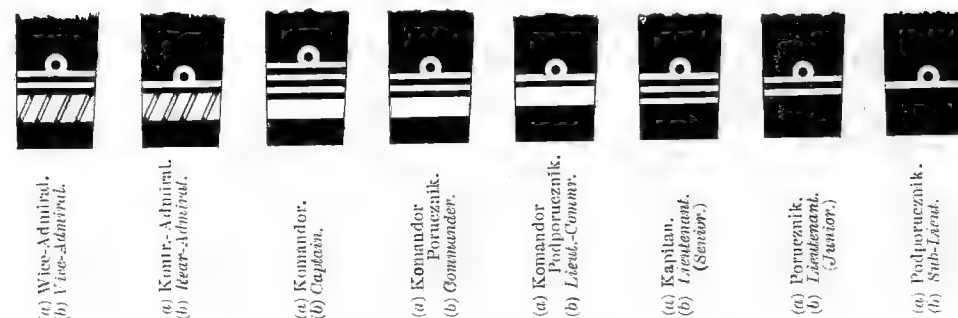
Military and Naval Attaché (London).—Major Count R. Michalowski.

Personnel.—250 officers, 2500 men; total, 2750.

Colour of Warships.—Pearl grey; of Naval River Craft, grey-green.

Uniforms.

(a)=Polish Rank. (b)=Equivalent British Rank.



Arsenals, Shipbuilders, &c.

A new naval base and dockyard is under construction at Gdynia, to be completed 1930.

MODLIN. Arsenal. Repair shops and plant for building hulls up to 100 tons.

PINSK. War port. Repair shops.

Unofficially reported that Naval Training Colleges have been established at Tczew (Dirschau) and Thorn, the Gunboat *Gen. Haller* carrying out instructional cruises for latter school.

At Pulawy, Warsaw, Plock and Thorn, establishments belonging to the Ministry of Public Works.

Private Establishments.—(a) Paruszewski, at Wloclawek; (b) Gornicki, at Plock; (c) Ateliers du Commerce et de la Navigation, at Warsaw; (d) Zieleniewski, at Cracow, for building machinery; (e) Lloyd Bydgoski, at Bromberg.

Mercantile Marine.

Official Polish figures, 1927.

32 Steamers of 33,775 tons; 90 Sailing Vessels, with auxiliary motors, of 3,600 tons. (There are besides 127,568 tons of shipping under the flag of Danzig). River Craft amount to 8,350 tons steam, 109,300 tons various.

Coinage.

1 Zloty=100 Groszy. Exchange (1928), 43 to the £.

POLISH FLEET.

Silhouettes, Gunboats.—POLAND.

Scale for all: 1 inch=80 feet. RECOGNITION SILHOUETTES.

NO FUNNELS.



WARSZAWA.
HORODYSZCZE.
TORUN
PINSK.

ONE FUNNEL.



KRAKOWIAK
SLAZAK
PODHALANIN } t.b.



CZAJKA
JASKOLKA
MEWA
RYBITWA } "Bird"
class
Sweepers.



KUJAWIAK t.b.



POMORZANIN.
(Surveying Vessel).



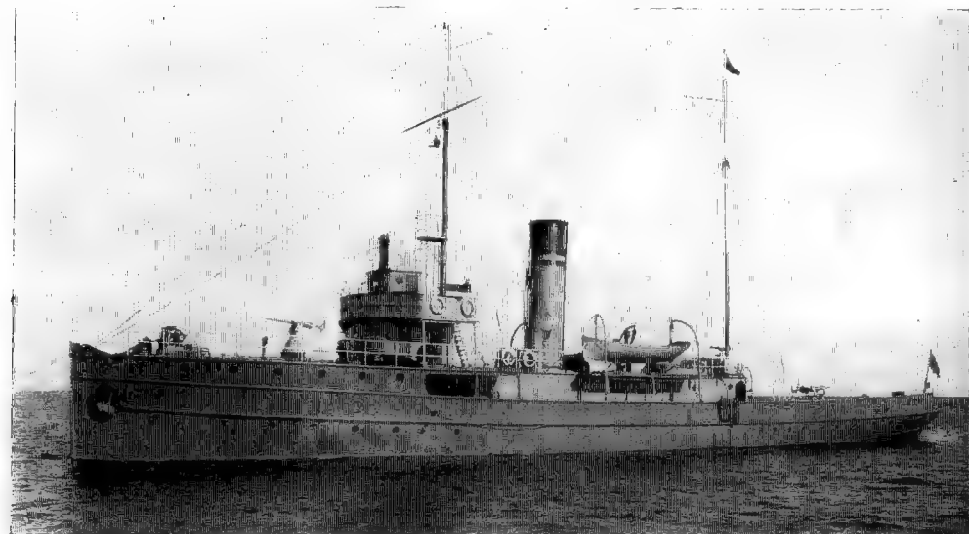
KOMENDANT PILSUDSKI } Gunboats.
GENERAL HALLER }

TWO FUNNELS.



MAZUR t.b.

Gunboats (*Lodzie Kanonierskie*).



1922 Photo, Comm. Filipowicz, P.N.

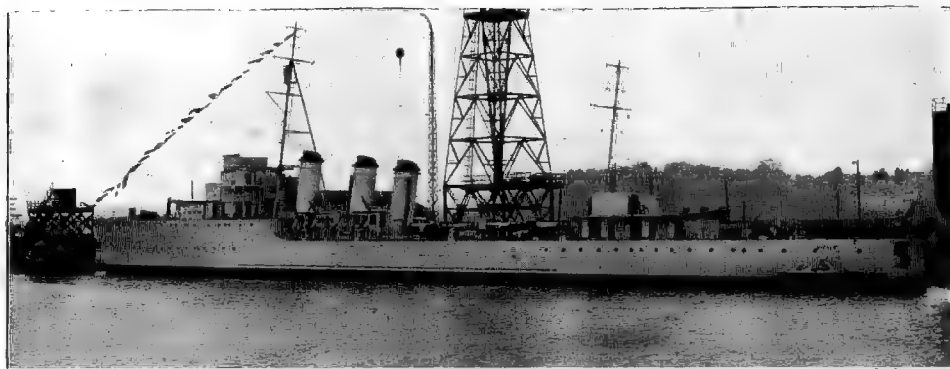
KOMENDANT PILSUDSKI } (Crichton, Abö, Finland, 1918-19.) } Completed Jan., 1921.
GENERAL HALLER } " " 1920.

Displacement: 342 tons *normal*, tons *full load*. Complement, 60. Length, (p.p.) 154.2 feet (o.a.), 164½ feet. Beam, 22¾ feet. Designed load draught, 7 ft. 7 ins. Guns: 2—12 pdr. 2—3 pdr.

Machinery: 2 sets triple expansion. 2 screws. Boilers: Normand. Designed I.H.P., 1000=15 kts. at 120 r.p.m. Coal capacity: 50 tons *normal*=700 miles at full speed.

Notes.—Belong to a Class of four vessels originally ordered for the Russian Navy, and designed by General Borowski late Chief of Naval Construction, Russian Baltic Fleet. The above two purchased from Finland; the remaining two added to Finnish Navy as *Karjala* and *Turunmaa* (q.v.). The above two Gunboats are for service in the Baltic, and for showing the Polish Flag in distant seas.

2 Destroyers.



WICHER.

1929 Photo by favour of M. Le Masson.

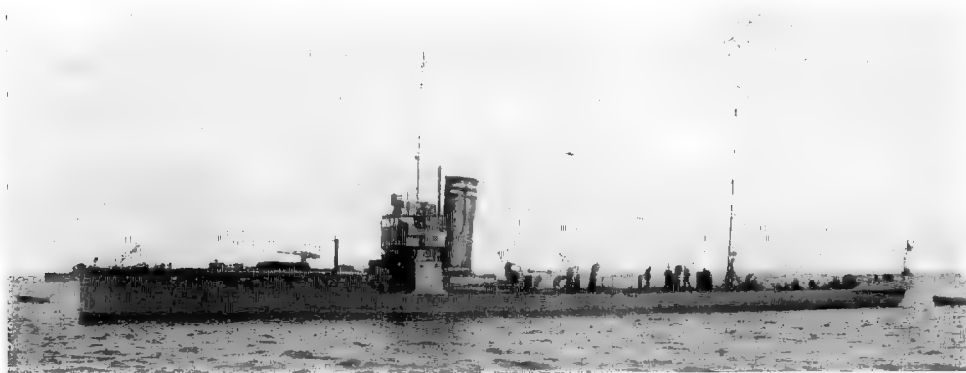


Burza (April 16th, 1929), **Wicher** (July 10th, 1928). Both laid down by Chantiers Navals Français, Blainville, Nov. 1st, 1926, and Feb. 19th, 1927, respectively. Displacement: 1500 tons. Dimensions: 344 (w.l.), 351 (o.a.) \times 29 \times 9½ feet. draught. Guns: 4—5.1 inch, 2—1.5 inch AA. Torpedo tubes: 6—20.8 inch, in triple deck mountings. Machinery: Geared turbines (supplied by At. & Ch. de la Loire). H.P. 35,000 = 33 kts.

Notes.—Design of these vessels follows closely that of French *Simoun* class. Meanings of names are: *Burza*, Squall; *Wicher*, Hurricane. To be completed 1929.

5 Torpedo Boats (Torpedowce).

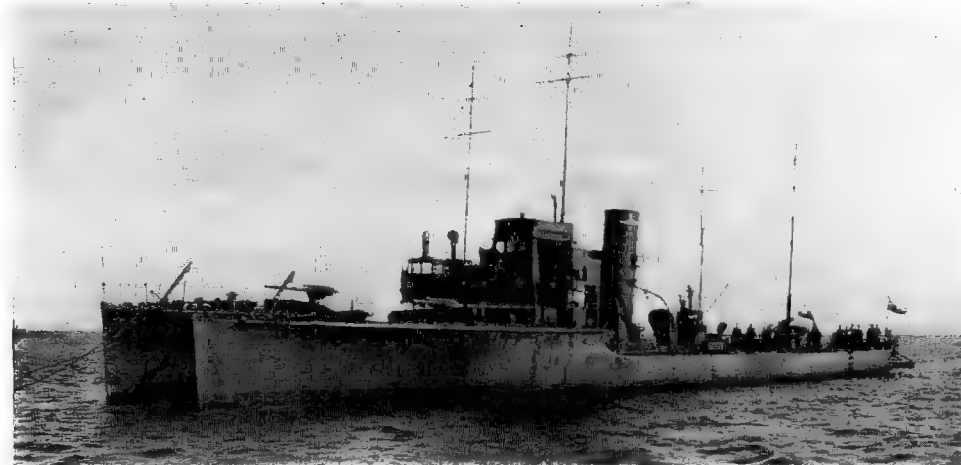
Transferred to Poland, Nov. 4th, 1920.



1922 Photo, Commr. Filipowicz, P.N.

1 "A III" type: **Kujawiak** (ex-German A 68). Built by Schichau, Elbing, during 1917. Displacement: 335 tons normal, 355 tons max. load. Dimensions: 196.9 (o.a.) \times 21 \times 7.4 feet. Guns: 2—12 pdr. 2 M.G. Tubes: 1—17.7 inch. H.P. 5800 = 27.1 kts. on trials. Fuel: 76 tons (on trials) 82 tons max. capacity = 725 miles at 20 kts. Complement, 69.

Notes.—A 68 re-fitted by H.M. Dockyard, Rosyth, 1921. A 69 was in so bad a state as to be not worth re-fitting; ex-German V 105 (ceded to Brazil, but not required by that country) was taken over in place of A 69.



KRAKOWIAK.

1922 Photo, Commr. Filipowicz, P.N.

3 "A III" type: **Krakowiak** (ex-German A 64), **Podhalanin** (ex-A 80), **Slazak** (ex-German A 59). Built by Vulkan, Stettin, 1916-17. Displacement: 365 tons normal, 380 tons max. load. Dimensions: 196.8 (o.a.) \times 21 \times 6 feet. Guns: 2—12 pdr., 2 M.G. Tubes: 1—17.7 inch. H.P. about 6050 = 28.38 kts. on trials. Fuel: 85 tons (on trials), 91.67 tons max. capacity. Complement, 69.

Notes.—A 64 re-fitted 1921, by H.M. Dockyard, Rosyth.



1922 Photo, Commr. Filipowicz, P.N.

1 ex-German boat: **Mazur** (ex-German V 105). Built by Vulkan, Hamburg, 1914-15. Displacement: 349 tons normal, 421.2 tons max. load. Dimensions: 205.6 (o.a.) \times 20.4 \times 7.4 feet. Guns: 2—12 pdr., 2 M.G. Tubes: 2—17.7 inch. H.P. 6000 = 30 kts., on trials 5500 = 28 kts. Fuel: 59.7 tons coal + 16.2 tons oil = 640 miles at 20 kts. Complement, 74.

Notes.—Original four boats of this class begun for Netherlands Navy as Z 1—Z 4; taken over by Germany, August, 1914, re-numbered V 105—108. V 107 War Loss. V 106 of this class assigned to Brazil, but sold to England. *Kaszub* (ex-V 108) sunk by explosion in July, 1925, and subsequently discarded as not worth repair.

POLISH FLEET.

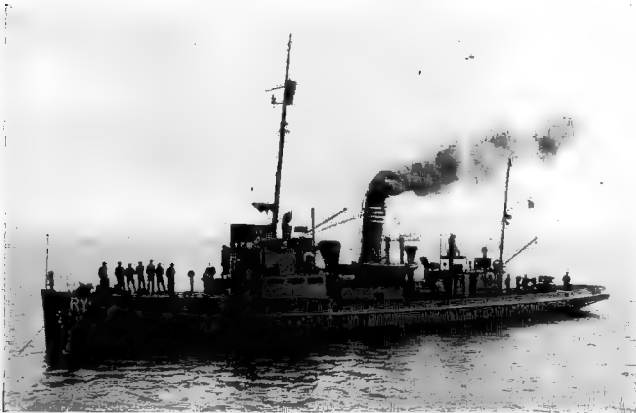
3 Submarines (*Minelayers*).

Laid down in May-June, 1927, for completion in 1929.

3 *Normand-Fenauz* type: **Rys** (At. & Ch. de la Loire, Nantes), April 22, 1929, **Zbik** (Ch. Navals Français, Blainville), **Wilk** (Ch. & At. Augustin Normand, Le Havre, April 12, 1929). Displacement: 2350 tons. Dimensions: 246 × 16 × 13 feet. Guns: 1—3.9 inch, 1—1.5 inch A.A. Torpedo tubes: 6—20.8 inch. Mines carried: 32. 2 sets Vickers-Normand Diesels, H.P. 1800 = 14 kts. on surface. Electric motors, B.H.P. 1200 = 9 kts. submerged. Radius of action: 7000 miles on surface, 100 miles submerged. Diving limit: 44 fathoms. Carry 10 torpedoes and 40 mines.

Notes.—Majority of above particulars are official. Meanings of names are as follows: *Rys*, Lynx; *Wilk*, Wolf; *Zbik*, Wild Cat.

Mine Sweepers (*Trawlers*).



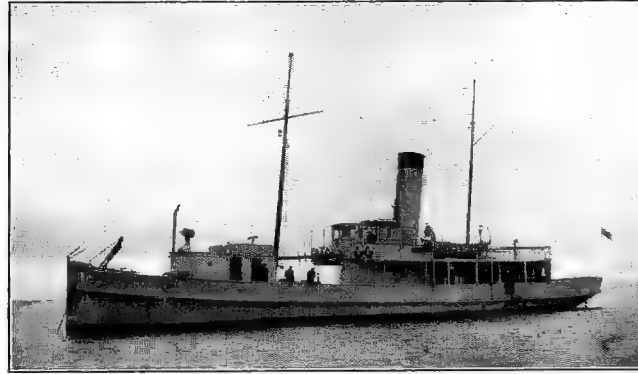
RYBITWA.

Photo 1922, Comm. Filipowicz, P.N.

CZAJKA (Plover), **JASKÓŁKA** (Swallow), **MEWA** (Sengull), **RYBITWA** (Sea Swallow). Built by various German shipyards. First two completed 1919. Last two completed 1917. Normal Displacement: 170.98 tons (203 tons full load). Dimensions: (p.p.) 131½, (w.l.) 132½, (o.a.) 140¾ × 19¾ × 4 feet normal draught, 5 feet "medium load" draught. Guns: 1—3 pdr., 2 M.G. Machinery: 2 sets triple expansion and one Normand or Schulz-Thornycroft boiler. I.H.P. 700 = 12 to 13 kts. speed. Coal: 20 tons normal; 34.6 tons full load. Oil: 4 tons. Complement, 44.

Notes.—Ex-German "F. M. Boote," i.e. flat-bottomed Mine "searchers." Performed very little service in German Navy. Purchased by Poland, 1921.

Surveying Ship (*Statek Hydrograficzny*).



1924 Official Photo.

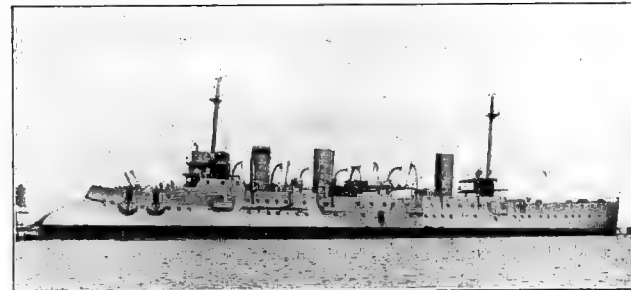
POMORZANIN (ex-German S.S. *Vulkan*, built by Boucke & Sieg, 1890). Displacement: 275 tons. Dimensions: 117½ × 20¾ × 8½ feet. Guns: 2—3 pdr., 2 M.G. Machinery: 2 sets triple expansion, I.H.P. 250 = 8 kts. 2 screws. 1 cyl. boiler. Coal: 46 tons. Complement: 34.

Transports (*Transportowce*).

Photo wanted.

WILJA. Displacement: 8400 tons. Dimensions: 342½ × 46 × 19½ feet. Speed: 10 kts. Complement, 53.

Training Ships.



KRAL WLADISLAW, IV.

1929 Photo.

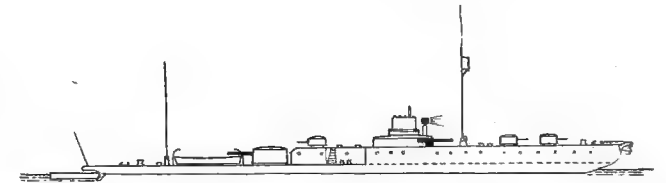
KRAL WLADISLAW IV (La Seyne, 1896). Displacement: 8000 tons. Dimensions: 393½ × 58½ × 23½ feet. Guns: Not reported. Designed H.P. 13,500 = 19 kts. (now much less). Depot and Training Ship at Gdynia.

Notes.—This vessel is ex-French Cruiser *d'Entrecasteaux*, which, having been presented to Belgium for use as a Training Ship, was retroceded to France on the suppression of the Belgian Navy, and acquired by Poland, in July, 1927.

Miscellaneous.—POLAND

ISKRA (1917). Auxiliary 3-masted Schooner, purchased in Netherlands, 1927. Displacement: 300 tons. Dimensions: 127½ × 25 × 9½ feet. H.P. 130 = kts. Sea-going Tender to *Kral Wladislaw IV*.

River Monitors (*Monitory*).



WILNO (1925), **KRAKOW** (1925), and 2 others (not yet named), building by Zieleniewski, Cracow, for completion in 1928. Displacement: 70 tons. Dimensions: 115 × 20 × 1.25 feet normal draught. Guns: 1—4.1 inch, 2—12 pdr., 3 M.G. Armour: Not reported. Machinery: 2 sets oil motors, each 70 H.P. = 9 kts. Complement, 35.



HORODYSZCZE and PINSK.

Official Photo, 1922.

WARSZAWA (1920), **HORODYSZCZE** (1920), **TORUN** (1920), **PINSK** (1920). "Armoured Monitors" built by Gdansk Shipyard, 1920, for service on the Vistula. Displacement: 110 tons normal, 135 deep load. Dimensions: 113.2 (o.a.) × 16.56 × 2.3 feet normal draught, 2.6 feet deep load. Guns: 2—4.1 inch, 5 M.G. Armour: ½" side amidships, ½" turrets. —" C.T. Machinery: 3 sets 60 B.H.P. Daimler motors totalling 180 B.H.P. = 9.1 kts. Petroleum fuel, 5 tons normal, 10 tons max. capacity = 1500 miles at 8 kts. Complement, 34.

**POLAND—Miscellaneous.
PERSIA—Gunboats.
PARAGUAY.**

Armed River Steamers.



HETMAN CHODKIEWICZ.

1924 Official Photo.

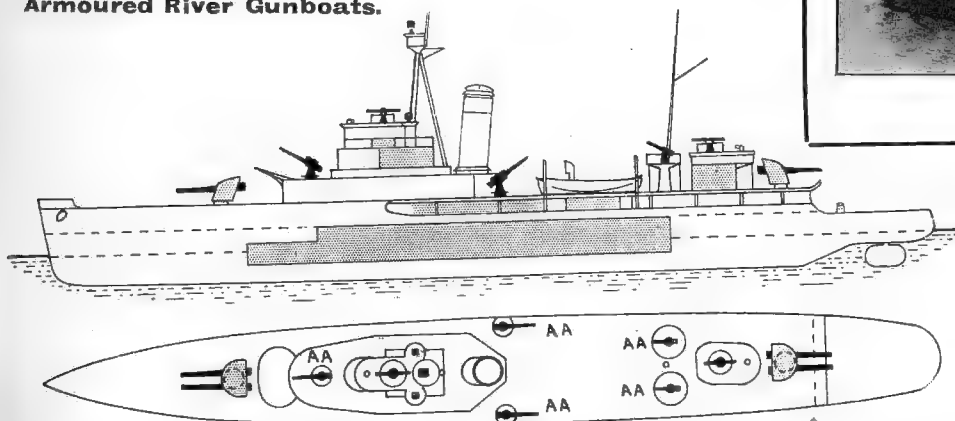
**ADMIRAL SIERPINEK, GENERAL SOSNKOWSKI,
GENERAL SIKORSKI, HETMAN CHODKIEWICZ,
ADMIRAL DICKMAN, GENERAL SZEPTYCKI.**
100-200 tons. 8-9 kts. Guns: 2-14 pdrs., and 4 M.G.
"Armour plated." Complement, 38.

River Motor Boats.

30 boats. 7-13 tons. 10 kts. Guns: 1-1 pdr., 2 M.G.

PARAGUAY.

Armoured River Gunboats.



COMODORO DEZA, CAPITAN CABRAL. Building by Odero, Genoa. Displacement: 745 tons (865 tons full load). Dimensions: 230 × 35 × 5½ feet draught. Guns: 4-4.7 inch, 3-3 inch AA, 2 pom-pom (40 m/m). H.T. Armour: ½" side amidships, ¼" deck, ¾" C.T. Parsons turbines and oil-fired boilers. H.P. = 17.5 kts. 170 tons oil and feed water. Radius 1700 miles at 16 kts. Complement 86. To be completed 1930.

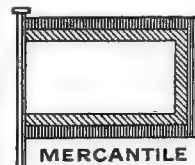
POLISH, PARAGUAY AND PERSIAN FLEET.

PERSIA.

Silhouette Scale: 1 inch = 160 feet.



ENSIGN



MERCANTILE



PERSEPOLIS



MOZAFFER.

Minister of War and Marine: Jaffar Kuli Assad.

Gunboats.



1924 Photo, R. G. Strugnell, Esq.

MOZAFFER (Nantes, 1899). Dimensions: 135 (o.a.) × 26 × 13 feet. 379 tons. No other details known. Served with and in H.M. Navy during the War. Re-conditioned by H.M. Dockyard, Bombay, before return to Persian Navy.

Gunboats—continued.



Photo, Lieut. Freiren, R.N.

PERSEPOLIS (1885). Dimensions: 207 × 32½ × 19½ feet. 1200 tons. H.P. 450 = 10 kts. Guns: 4 old 2.7 inch, 2 machine. Still in service, 1921.

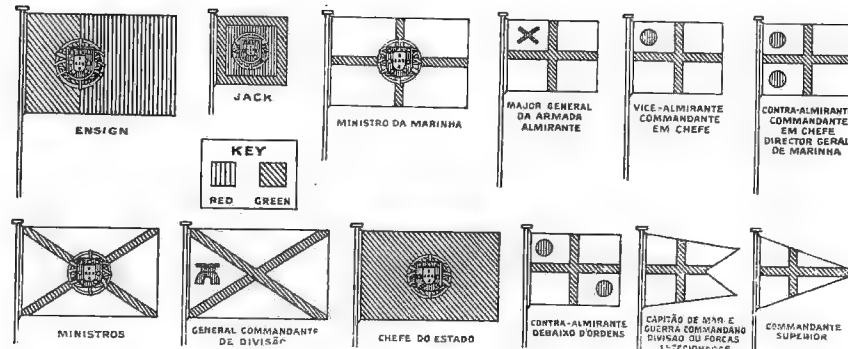
Appearance similar to Polish *Rybitwa*, on preceding page.

PAHLAVI. This vessel is believed to be an ex-Minesweeper of German F.M. type, built 1917, and purchased 1923, for £4000. Displacement: (normal) 135 tons. Dimensions: 132½ (w.l.) × 19½ × 4 feet normal draught. Guns: 1-3 pdr. Machinery: 2 sets triple expansion. Oil fuel: 35 tons. I.H.P. 800 = 16 kts. (after alterations). Complement, 14.

Note.—There was formerly a gunboat on the Caspian, which was captured by Soviet Forces in May, 1920, and is believed to have been retroceded to Persia.

PORTUGUESE FLEET.

Flags, Uniforms, Silhouettes—PORTUGAL



Naval Uniforms:



British rank.

* Admiral has four gold stars. † Vice-Admiral has three gold stars. ‡ Rear-Admiral has three silver stars. Staff officers same but without executive curl. Colour between stripes—Surgeons: red; Engineers: violet; Paymasters: blue; Constructors: purple red. On visor of cap, Admirals: 2 oak leaves; Captains: 1 oak leaf; Commanders: 1 narrow stripe. Uniforms like British Navy. Chin strap of gold cord, but officers of lieutenant's rank and below have black chin straps.

Minister of Marine: Captain Magalhaes Correa.

Naval Attaché, London: Capitão de Fragata Fernando Branco.

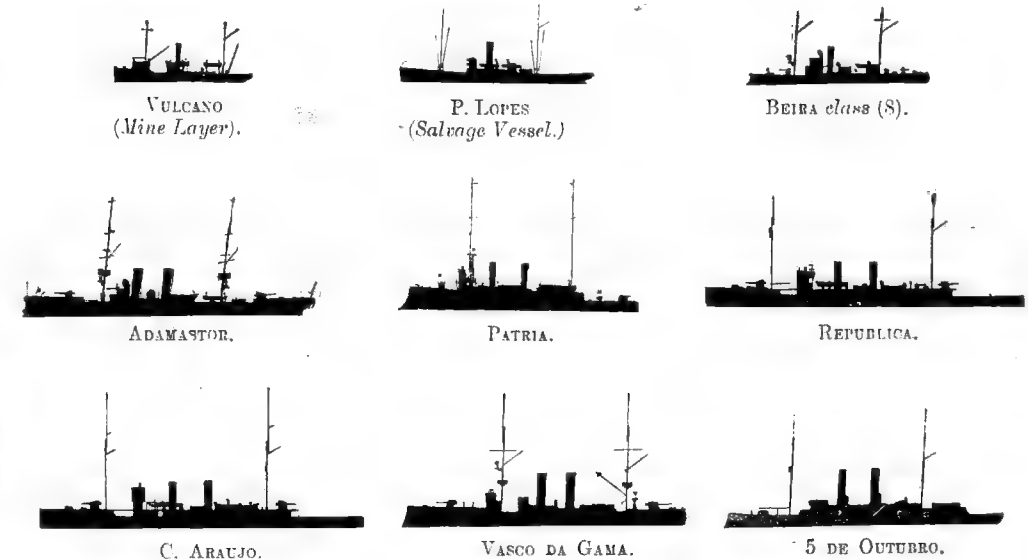
Personnel: 725 officers and 4445 men. Colour of Ships: Dark grey.

Mercantile Marine: (From "Lloyd's Register," 1929 figures.) Total gross tonnage, 246,368.

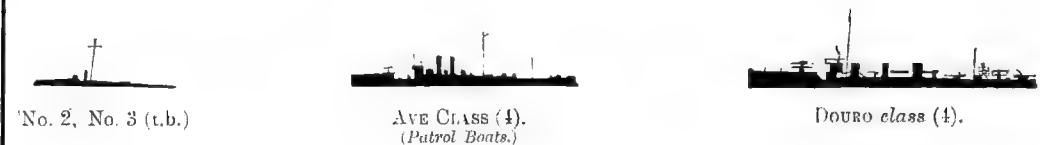
Scale: 1 inch=160 feet.



All displacements in English tons unless otherwise stated.



TORPEDO AND PATROL CRAFT. Scale: 1 inch=160 feet.



SUBMARINES. Scale: 1 inch=80 feet.





1919 Photo.

VASCO DA GAMA (Blackwall, 1876, reconstructed and lengthened by Orlando, 1902). 2982 tons. Comp., 259. Dimensions: $232.9 \times 40\frac{1}{4} \times 18\frac{1}{4}$ feet. Guns (re-armed 1922) 1—8 inch (40), 1—6 inch (45), 1—4 inch (40), 6—14 pdr. No torpedo tubes. Armour (iron): 9"—7" Belt, $7\frac{3}{4}$ " (Terni) Barbettes. Machinery: 2 sets triple expansion. 2 screws. Designed H.P. (new): 6000=15.5 kts. Boilers: Cylindrical. Coal: 300 tons.

Note.—Doubtful if this ship can do 12 kts. now.



1919 Photo.

ADAMASTOR (Orlando, 1896). 1729 tons. Comp., 206. Dimensions: $242.1 \times 35.1 \times 15.3$ feet. Guns: 2—4.7 inch (Canet), 4—4.1 inch (Krupp), 4—3 pdr. (Hotchkiss), 3 machine. Torpedo tubes (14 inch): 3 above water (bow and broadside abreast of Q.D. gun). Armour: $1\frac{1}{4}$ " Deck, $2\frac{3}{4}$ " C.T. Machinery: 2 sets triple expansion. 2 screws. Boilers: 8 cylindrical. H.P. forced 4000 = 18.19 kts. Coal: 420 tons. Employed on Colonial service. (Re-fitted, 1919-22).



REPUBLICA. C. ARAUJO of similar appearance.

1921 Photo, by courtesy of the Ministry of Marine.

(Crowsnest now removed.)

REPUBLICA (ex-British Fleet-sweeping Vessel, *Gladius*, launched Oct., 1915, by Messrs. Chas. Connell & Co., Scotstoun.) 1250 tons. Dimensions: $255\frac{1}{4}$ (p.p.), $267\frac{3}{4}$ (o.a.) $\times 33\frac{1}{2} \times 11$ (mean), $11\frac{3}{4}$ feet (max. draught). Guns: 2—4 inch (British Navy Mk. IV.), 2—3 inch A.A. (Elswick), 2—9 pdr. (Hotchkiss), 4—3 pdr. (Hotchkiss). Designed I.H.P. 1400=17 kts., but actually requires about 2200 I.H.P. for this speed. Machinery: 1 set 4-cyl. triple exp. Boilers: 2 cylindrical. 1 screw. Coal: 130 tons normal; 260 tons max.= about 2000 miles at 15 kts. Complement (79 as British ship). Built under British Emergency War Programme as a unit of the *Azalea* group of "Flower Class" Sloops. Sold to Portugal 1920.

CARVALHO ARAUJO (ex-British Fleet-sweeping Vessel, *Jonquil*, launched May, 1915, by Messrs. Chas. Connell & Co., Scotstoun.) 1200 tons. Dimensions: 250 (p.p.), $262\frac{1}{2}$ (o.a.) $\times 33 \times 11$ (mean), $11\frac{3}{4}$ feet (max. draught). Guns: as *Republica* above and also 2 Thornycroft type depth charge throwers. Designed I.H.P., speed, machinery, boilers, &c., as *Republica* opposite, but max. coal capacity 250 tons, and complement (as British ship) 77. Built under British Emergency War Programme as a unit of the *Acacia* group of "Flower Class" Sloops. Sold to Portugal 1920. Employed on Fisheries Protection Duties.

4 Destroyers. (Contra-torpedeiros).

No.	Type	Date	Dis- place- ment	H.P.	Max. speed	Coal	Com- plement	T. tubes	Max. draught
2	Vouga (Y)	'14-'23	} 660	11,000	27t	146	73	2	7½
2	Douro (Y)	'11-'13							

(t)=turbine. (Y)=Yarrow.

New Construction.

2 Flotilla Leaders of 2000 tons and 4 Destroyers of 1200 tons, projected.



GUADIANA.

1919 Photo.

4 Yarrow type. **Vouga** (1920.) and **Tamega** (Jan. 1921) both by Lisbon D.Y., **Douro** (1913) and **Guadiana** (1914). 660 tons. Dimensions: 240×23½×7½ feet, max. draught. Armament: 1—4 inch, 2—3 inch. 2 pairs of 18 inch Torpedo tubes. Parsons turbines; 3 Yarrow boilers. Coal: 146 tons=1600 miles at 15 kts. Built by Yarrow and assembled at Lisbon. On trials, Douro made 30.3 kts. good for 27 now.

5 Torpedo Boats. (Torpedeiros).



1921 Photo, by courtesy of the Ministry of Marine.

(Assigned to Portugal for Police Duties only, Sept., 1920, and officially rated as Patrol Boats).

4 Ex-Austrian boats: **Ave, Sado, Lis, Mondego** (Ganz-Danubius Co., Porto Ré, Fiume, 1913-15). Displacement: 266 tons. Dimensions: 188'3 × 19 × 8 feet max draught. Guns: 1—11 pdr. (aft). Tubes may have been removed. Designed S.H.P. 5000=28 kts. (made 31 kts. when new). Turbine engines and Yarrow boilers. Fuel: 20 tons coal + 34 tons oil. Complement, 45.

(For appearance see Silhouettes.)

1 old Yarrow type. **No. 2** (Foplar, 1886). 66 metric tons. Dimensions: 119½×12½×3.4 feet. Armament: 2 M.G. and 2 tubes. Designed H.P. 700=19 kts. (much less now). 1 screw. Coal: about 18 tons. Complement, 22.

PORTUGAL—Submarines, etc.

SUBMARINES AND MISCELLANEOUS.

4 Submarines. (Submersíveis).

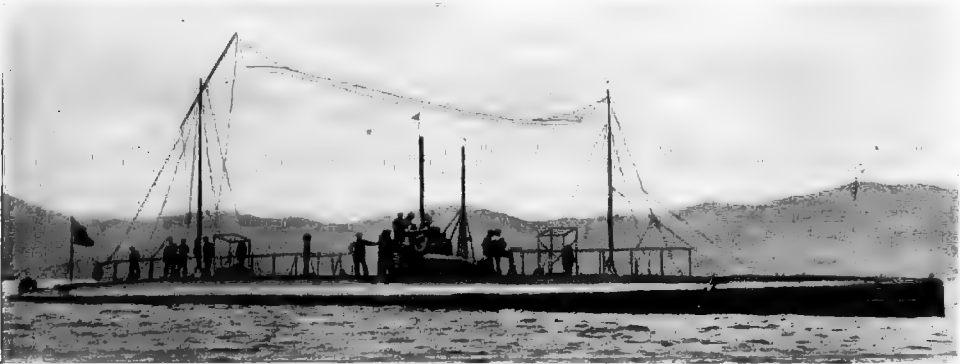
No	Class	Date	Dis- place- ment	H.P.	Speed	Endurance	T. tubes	Com- ple- ment	Max. draught
3	<i>Foca</i> class	'15-'17	tons 260 380	550 400	kts. 11.2 8	3500 miles at 8½ kts. 18—100 miles.	2	21	10½
1	<i>Espadarte</i>	'10-'13	245 300	550 300	13.8 8	1500 miles at 8½ kts. 24—100 miles.	2	21	10

All above boats are of the Laurenti type. Displacements in metric tons. All have Fessenden submarine signalling gear.



1919 Photo.

3 Laurenti-Fiat type: *Foca*, *Golfinho*, and *Hidra* (all built at Spezia, 1916—1917). Dimensions: 147½ × 13.8 × 10½ feet. Armament: 2—18 inch bow torpedo tubes. 4 torpedoes. Machinery: 2 sets of 275 B.H.P. 6—cylinder Fiat-Diesel engines *on surface*; electric motors + batteries *submerged*. Maximum speeds: 14.2 kts. *on surface* and 8½ kts. *submerged*. Radius of action: about 650 miles at full speed, and 3500 miles at 8½ kts. *on surface*; about 18 miles at 8½ kts. and 100 at 4 kts. *submerged*.



1920 Photo, Ministry of Marine.

1 Laurenti-Fiat type: *Espadarte* (Spezia, 1912). Displacement, ²⁴⁵/₃₀₀ tons. Dimensions: 148 × 13½ × 9.7 feet. Torpedo tubes: 2—18 inch (bow). 4 torpedoes carried. Machinery: 2 sets 275 B.H.P. 6-cyl. Fiat-Diesel engines *on surface*; electric batteries + motors *submerged*. Maximum speeds, 13½ kts. *above* and 8 kts. *below* water. Radius of action: 1500 miles at 8½ kts. *on surface*; 24 miles at 8 kts., and 100 miles at 4 kts. *submerged*.

Training Ship.

SAGRES (1904). Sailing Vessel of 2000 tons gross, acquired in 1924. Displacement: 3221 tons. Dimensions: 262½ × 40 × 18 feet. Complement: 47. No other details yet available.

Salvage Vessel. (*Vapor de Salvação*.)

(*Appearance as Silhouette.*)

PATRÃO LOPES (ex-*Neva*, Rostock, 1880). Iron. 1100 tons. 157.5 (*p.p.*) × 26.2 × 14.6 feet. I.H.P. 378=10 kts. 1 screw. Coal: 130 tons. Complement: 53.

Coastguard Patrol Vessel.

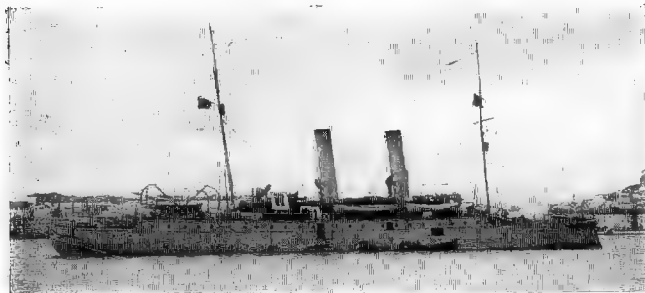
TORRES GARCIA (Vigo, 1928). 250 tons. 91½ × 19½ × 10 feet. Triple expansion engines. 1 screw.

MISCELLANEOUS.

Gunboats (*Canhoneiras*)—continued.

Note.—On this and succeeding page, vessels employed on Colonial service have the letter (C) prefixed to their names.

Surveying Vessel.

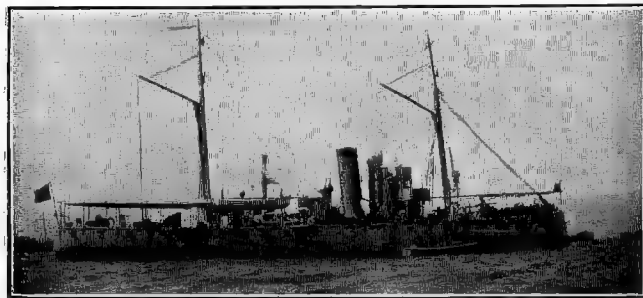


1919 Photo.

CINCO DE OUTUBRO (ex *Amelia*, ex *Banshee*; Ramago & Ferguson, Leith, 1900). 1343 tons. 226·9×28·9×14 feet. Guns: 2—1 pdr. H.P. 1800=15 kts. 2 screws. Cylindrical boilers. Coal: 230 tons. Complement, 225.

Gunboats (*Canhoneiras*).

DAMÃO (1925), **DIU** (Oct., 1929), **ZAIRE** (ex-*Goa*, 26th Feb., 1925), built at Lisbon D.Y. 500 tons. Details and appearance as *Beira*-class below, with minor improvements.



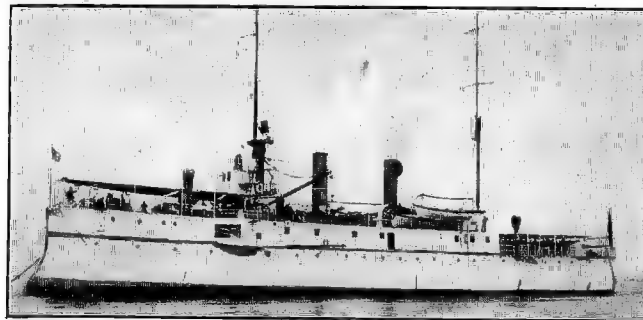
Photo, R. E. Forrest, Esq.

BENGÓ (1917), **MANDOVI** (1917), **QUANZA** (1918), **BEIRA** (1910) and **IBO** (1910). All built at Lisbon D.Y. 463 tons. Dimensions: 147½×27½×6·8 feet. (Guns: in *Bengó*, 1—3·5 inch, 4—3 pdr.; *Mandovi* and *Ibo*, 1—3 inch, 2—6 pdr., 2—3 pdr.; in *Quanza*, 2—3 inch; in *Beira*, 1—3·5 inch, 1—9 pdr., 2—3 pdr. H.P. 700=13 kts. Coal: 85 tons. Radius: 3200 miles at 9 kts. Boilers: Cylindrical. 2 screws. Complement, 71.



1919 Photo.

(C) **SAVE** (1908) and (C) **LURIO** (1907). Both built at Lisbon D.Y. 305 tons. Dimensions: 140·4×23·6×5·9 feet. Guns: 2—3 pdr., 1 machine. H.P. 500=12½ kts. Boilers: Cylindrical. 2 screws. Coal: 61 tons. Complement, 51.

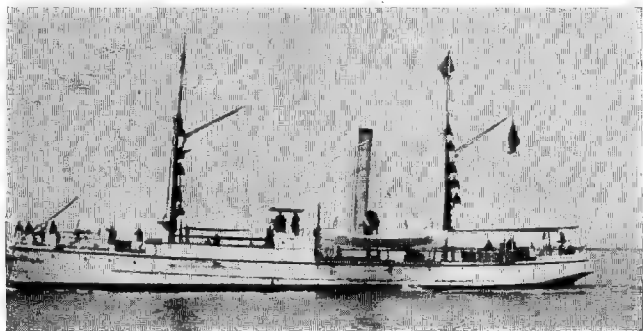


Patria (present rig).

Photo added 1925.

(C) **PATRIA** (Lisbon D.Y., 1903). 626 tons. Dimensions: 196·8×27·5×8·4 feet. Guns: 4—3·9 inch, 6—3 pdr., 1 machine. ½" water-line belt. H.P. 1890=16·7 kts. Cylindrical boilers. 2 screws. Complement, 88.

Note.—This vessel normally serves as Senior Officer's Ship on the China Station.



LIMPOPO.

(For details see next column).

1919 Photo.

Miscellaneous—PORTUGAL

Gunboats (*Canhoneiras*)—continued.

LIMPOPO (Poplar, 1890). 288 tons. 124×21×6½ feet. Guns: 3—6 pdr., 1 machine. H.P. 523=11·3 kts. Complement, 54.

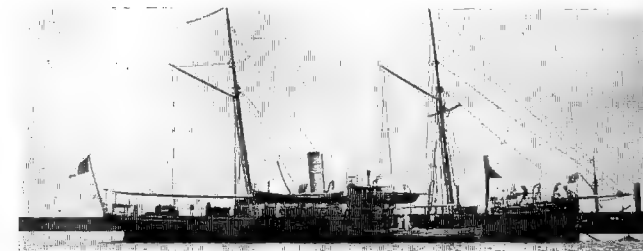
No photo available.

(C) **DILY** 500 tons. 140 (p.p.)×25×10·3 feet. H.P. 500=11 kts. 1 screw. Complement, 72.

Fishery Protection Gunboats.

Photo wanted.

FARO, LAGOS. Specially designed for Fishery Protection duties. Built at Lisbon D.Y. 2 more Fishery Protection Gunboats of this type are under construction.



1919 Photo.

ACOR (ex-s.s. *Gomes VII*, 1874). 330 tons. 136·1×19×9 feet. Guns: Nil. 1.H.P. 360=9 kts.; could make 11 with sail out. Complement, 53. Has been employed on fisheries and surveying duties, and may be condemned shortly.

RAUL CASCAES. 188 tons. Employed on Fishery Protection duties.

For River Gunboats, see next page.

PORTUGAL—Miscellaneous.

Transports.

GIL EANES (1914). 1775 tons gross. $278 \times 41 \times 16.8$ feet. H.P. 1300=11 kts. 1 screw. Cylindrical boilers. Employed as Fleet Collier at present.



1919 Photo.

SALVADOR CORREIA (Birkenhead, 1895). 300 metric tons. $140 \times 21 \times 7$ feet. Guns: 1—3 pdr., 2—1 pdr. H.P. 450=11 kts. 1 screw. Cylindrical boilers. Coal: 80 tons. Complement, 19.

**Bissau* (1913). 300 metric tons.

**Massabi* (1886). 266 metric tons.

**Vilhena*.

*Above three vessels serve as Transports in the Colonies of Guinea and Angola; they have mixed complements of naval officers and civilians.

Mining Vessel.

Note.—This vessel is attached to school and service for laying out defensive minefields and is under control of War Office.



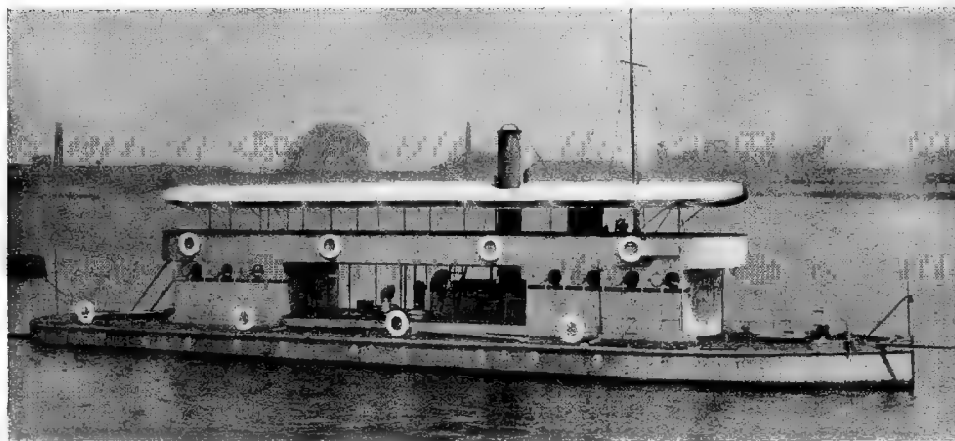
1919 Photo.

Has no distinctive name or number* is referred to as "Mineiro," i.e., Mining Vessel. (Built 1892). 78 metric tons. $58.5 \times 13.4 \times 7$ feet. I.H.P. 150=8 kts. 2 screws. 1 cylindrical boiler. Coal: 10 tons.

MISCELLANEOUS.

(C)=On Colonial Service.

Small River Gunboats. (*Lancha Canonheiras*.)



(C) **MACAU** (Yarrow, 1909). 133 tons. $119\frac{3}{4} \times 19.8 \times 2$ feet. Guns: 2—6 pdr., 3 machine. H.P. 250=11.8 kts. Boilers: Yarrow. Complement, 24.

Note.—On Zambesi River, there is also a Stern Wheel Gunboat *Tete*, built by Yarrows, 1918-19, but she is the property of the Colonial Department. Displaces 70 tons. Armed with 2—1 pdr. (Hotchkiss), and 2 M.G. Speed 9 kts.

RIO MINHO (Lisbon D.Y., 1904). 38 tons. Paddlewheel. $80.7 \times 13.1 \times 1.9$ feet. H.P. 64=7½ kts. Guns: 2—1 pdr. Complement 68, are nominally borne on her books, the majority of these ranks and ratings being actually at various shore stations on the Portuguese bank of the river Minho, for fisheries, customs duties, &c.

(C) **FLECHA**, is also given in Official Navy List as **FLEXA** (1909). 44 tons. $68.8 \times 13.1 \times 2.2$ feet. Guns: 1—1 pdr. 1 screw. H.P. 45=10 kts. Complement 7.

Mine Layer. (*Vapores lanca minas*.)



1919 Photo.

VULCANO (1910). Built by Thornycroft. 151 tons. $110 \times 19\frac{1}{2} \times 4\frac{1}{2}$ feet. 2 dropping gears forward. H.P. 412=12 kts. 2 screws. Cylindrical boiler. Complement, 24.

Armed Launches.

Note.—Are attached to Aviation Services.



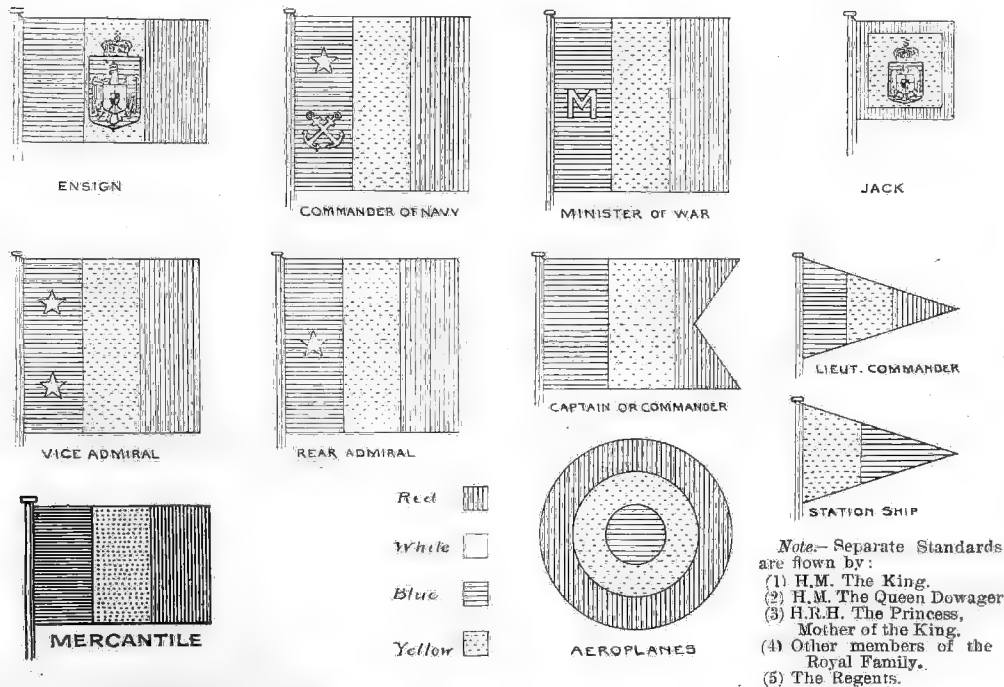
No. 3. 1921 Photo, by courtesy of the Portuguese Naval Attaché.

2 boats: **No. 2**, **No. 3**. Are ex-British M.L. 557 and M.L. 574, built 1915, purchased for Portuguese Navy, 1920. Load, displacement: 37 tons. Dimensions: $80 \times 12\frac{1}{2} \times 3$ feet (max. load draught). Guns: not known. B.H.P. 440=17.5 kts. 2 sets Standard petrol motors. Fuel: 2050 gallons petrol. Complement, 9.

ROYAL ROUMANIAN NAVY.

ROUMANIA

Revised, 1929, from Notes furnished by courtesy of Dr. Ing. Wladimir V. Mendl, A.M.I.N.A., of Bucarest.



Minister of War: General Henric Cihosky. Inspector General of Navy: Vice-Admiral Vasile Scodrea.
 Mercantile Marine: Total gross tonnage (from "Lloyd's Register," 1929), 68,647.
 Colour of Ships: Light grey.
 Naval Attaché, London: Commander Gheorghe Niculescu.

Personnel: 289 officers, 3702 men. Navy Estimates, 1927-28: £208,000.

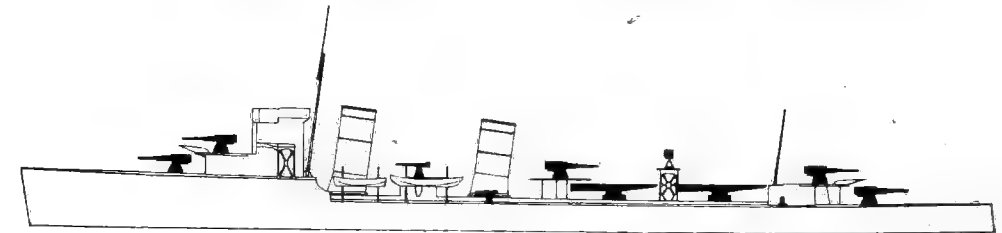
Uniforms.



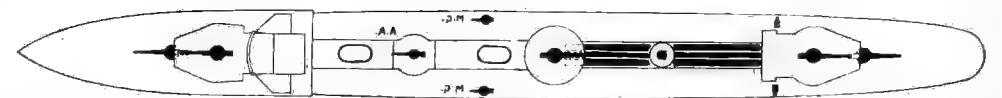
In addition to above, there is rank of Contr' Amiral (British, Rear-Admiral) as Vice Amiral but without lower thin stripe.

Stripes are gold (except Paymasters, who wear silver) with curl for all branches. Colour of silk between, above and below stripes:—Executive, black; Engineers, violet; Surgeons, dark red, almost purple in colour: Constructors, Light blue.

(1) Black Sea Division. (Divizia de Mare). **4 Destroyers.** (Distrugătoare.)



Plan by courtesy of Messrs. Thornycroft (Designers).



2 Thornycroft type: **Regele Ferdinand I** (Dec. 2nd, 1928), **Regina Maria** (March 2nd, 1929). Laid down at Pattison Yard, Naples, in June, 1927, to design of Messrs. Thornycroft. Displacement 1900 tons. Dimensions: 334½ x 31½ x 11½ feet. Parsons geared turbines by Stabilimento Tecnico Triestino. I.P. 75,000 = 34 kts. Radius: 3000 miles at 15 kts. Armament: 5—4·7 inch, 50 cal. Bofors, 1—3 inch, A.A., Bofors, 2—2 pdr. pom-pom, 6—21 inch torpedo tubes (triple), 50 mines, Firing Director of Siemens type. Cost per ship, without armament £205,000.



1919 Photo.

2 Pattison type: **Marasti** (ex-Italian Sparviero, 1919), and **Marasesti** (ex-Italian Nibbio, 1918). 1391 tons normal (1723 tons full load). Dimensions: 309½ (n.p.) x 31 x 11½ feet. Guns: 3—4·7 inch, 4—14 pdr., 40 cal. A.A. 2 M.G. Tubes: 4—17·7 inch in twin deck mountings. Searchlights: 1—36 inch, 1—13 inch. Designed S.H.P. 45,000 = 35 kts. Trials: **Marasesti**, 48,020 S.H.P. = 38·04 kts., 2 Tosi turbines. 2 screws. 4 Thornycroft oil burning boilers. Oil: 260 tons = 1700 miles (15 kts.), 380 miles (full speed). Complement: 139.

Notes.—Belong to class of 4 Destroyers, **Vifor**, **Viscol**, **Vartej**, **Vijelia**, ordered for Roumanian Navy about 1913. Were requisitioned for Italian Navy during war and re-named **Aquila**, **Falco**, **Nibbio**, **Sparviero**. Last two re-purchased by Roumania 1920, and renamed after actions fought in 1917. Refitted and rearmament at Galatz and at Naples, 1925-26.

6 Torpedo Boats.* (Torpiloare.)

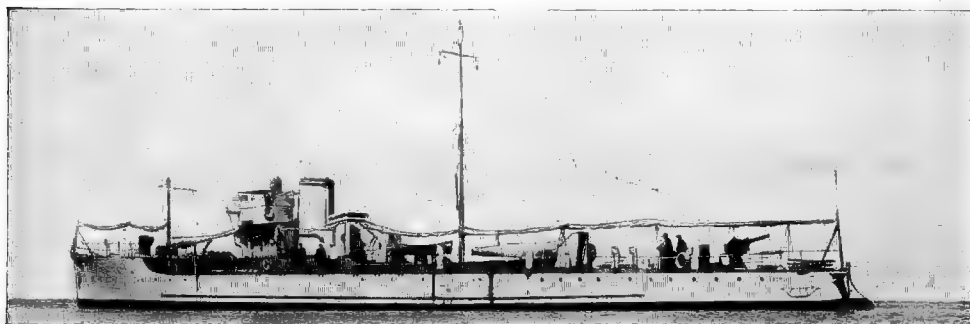
No.	Type	Date	Dis- place- ment tons	H.P.	Max. speed kts.	Fuel tons	Com- plement	Tubes or Gears	Max. draught feet
4	Vifor (ST)	1913-	262	5000	24	(42)		2 in some.	5
2	Naluca (GD)	15	266	t	...	(54)			

(GD)=Ganz-Danubius, Fiume.

(t)=Turbines.

(ST)=Stab. Tecnico Triestino, Trieste.

*Ex-Austrian boats taken over at Venice, 1920. Another of these boats (*Fulgerul*) was lost on the voyage from Italy to the Black Sea.



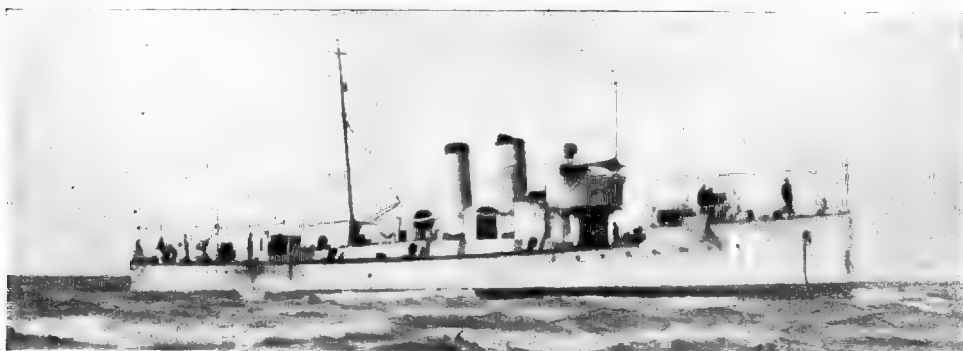
(Black Sea.)

1922 Photo, M. Klein.

4 Ex-Austrian boats: *Vifor* (ex 74T), *Vartej* (ex-75T), *Vijella* (ex-80T), *Sborul* (ex-81T), (Stab. Tecnico Triestino, Trieste, 1913-14). Displacement: 262 tons. Dimensions: 189½ × 19 × 5 feet. Guns: *Sborul* and *Vifor*, 2—11 pdr.; *Vartej* and *Vijella*, 2 M.G. Torpedo tubes: 2—17.7 inch in *Sborul*, 2—15 inch in *Vartej*, none in others. Searchlights: 1—16 inch in all. Designed S.H.P. 5000=28 kts. (24 best speed now). Turbine engines and Yarrow boilers. Fuel: 18 tons coal+24 tons oil.



Note.—Vifor means Snowstorm; Vartej, Whirlwind; Sborul, Flight; Vijella, Thunderstorm.



NALUCA.

(Black Sea.)

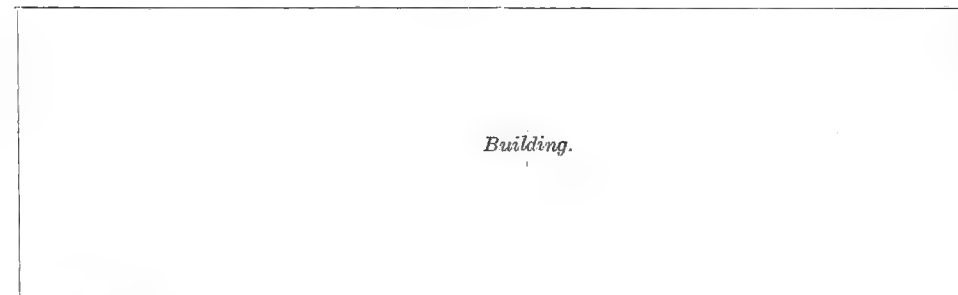
1923 Photo, Captain A. Tiufiacoff, late I.R.N.

2 Ex-Austrian boats: *Naluca* (ex-82F), *Smeul* (ex-83F), (Ganz-Danubius Co., Porto Ré, Fiume, 1913-14.) 260 tons. Beam, 19 feet. Guns: 2—11 pdr., 2 M.G. No tubes. 1—16.5 inch S.L. Fuel: 20 tons coal+34 tons oil, other details as *Vifor* class on previous column. Owing to stranding, *Naluca* is at present under repair. *Smeul*=Dragon. *Naluca*=Phantom.

Submarine (Submarin.)

1 Quarnaro boat: *Delfin*. Laid down at Fiume, August, 1927. Displacement: 650 tons. Dimensions: 225 × 19½ × 12 feet. Speed 1½ kts. To be armed with 1—4 inch gun and 8 tubes.

Submarine Depot Ship. (Nave Baza.)



Building.

Constanta. Laid down at the Quarnaro Yard, Fiume, 15th August, 1927, for completion in 1929. Displacement: 2300 tons. Dimensions: 253½ × 37 × 13½ feet.

(Black Sea) Gunboats. (Canoniere.)



1919 Photo.

LOCOTENENT LEPRI REMUS (ex-French *Chiffone*, Lorient D.Y. launched 1917).

LOCOTENENT-COMANDOR STIHI EUGEN (ex-French *Friponne*, Lorient D.Y., launched 1916).

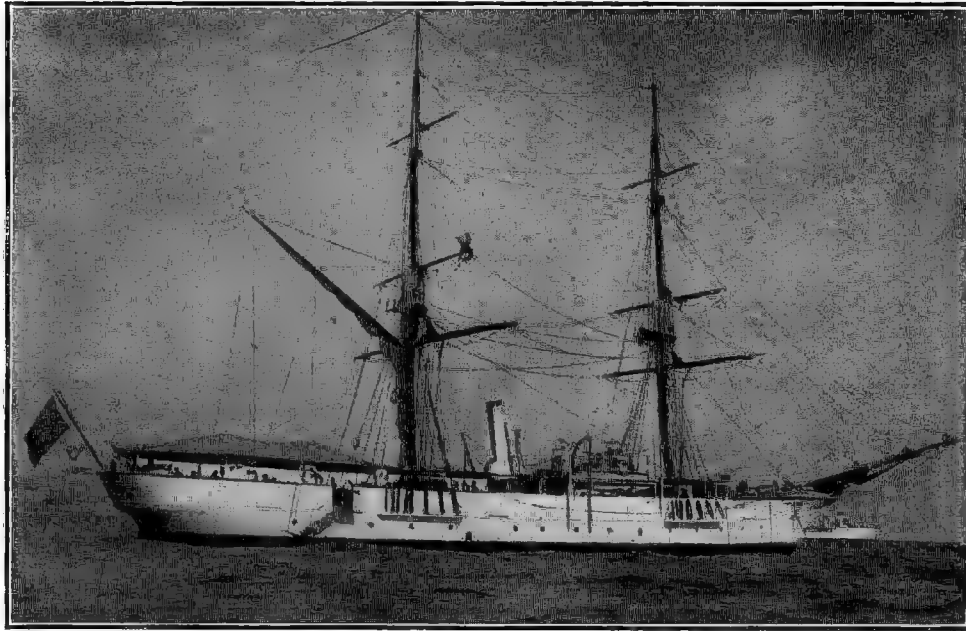
SUBLOCOTENENT GHICULESCU (ex-French *Impatiente*, Brest D.Y., launched 1916).

CAPITAN DUMITRESCU C. (ex-French *Mignonne*, Brest D.Y., launched 1917).

Displacement: 400, 450, 350, 390 tons respectively. Length: 189½ to 199½ ft. Beam: 22 ft. 7 in. Draught: first pair, 9½ ft.; second pair, 7½ ft. Guns: 2—3.9 inch. 2 M.G. S.L.: 2—15.7 inch. Engines: 2 sets of Sulzer Diesel motors. B.H.P. 900=15 kts. Fuel carried: 30 tons oil=3000 miles (10 kts.), 1600 miles (15 kts.). Complement, 50.

Notes.—Purchased from French Navy, 9th January, 1920. Entered service 15th Jan., 1920. Are differentiated by coloured rings around crow'snest. Names are those of naval officers killed in action, 1916-18.

(Black Sea.) Training Ship (*Vas Scola*).^v



MIRCEA.

1928 Photo, by favour of Dr. Mendl.

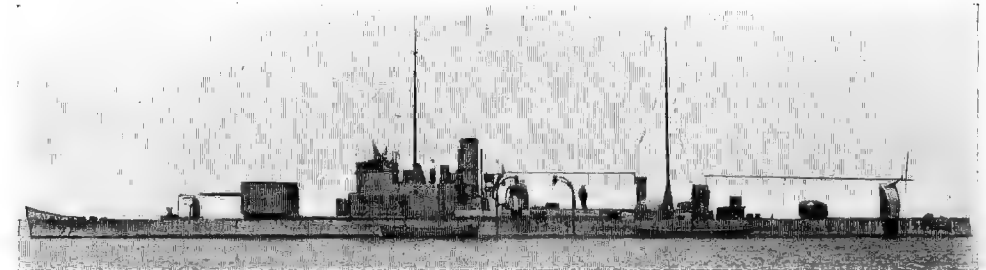
MIRCEA (1882). Brig, with auxiliary engine. 350 tons. 118 × 25 × 8½ feet. Guns: 2—1 pdr., 2 M.G. I.H.P. 160=8.5 kts. Coal: 32 tons. Complement, 80.

Note.—Refitted 1923-24. *Mircea* is said to have been one of the fastest sailing ships of her time, having made up to 16—17 kts. At one time the Russians proposed to exchange her for a gunboat of the "Kubanetz" class, but the Roumanians refused, as all the traditions of their Navy resided in the *Mircea*. She is named after a Prince who flourished 1386—1418, defeating the Turks and occupying the territory on both banks of the Danube down to the Black Sea.

(2) Danube Division (*Divizia de Dunare*).^v

Monitors (*Monitoare*).

Note.—With exception of *Bratianu* class, all are named after Roumanian provinces.



(Has flush deck forward.)

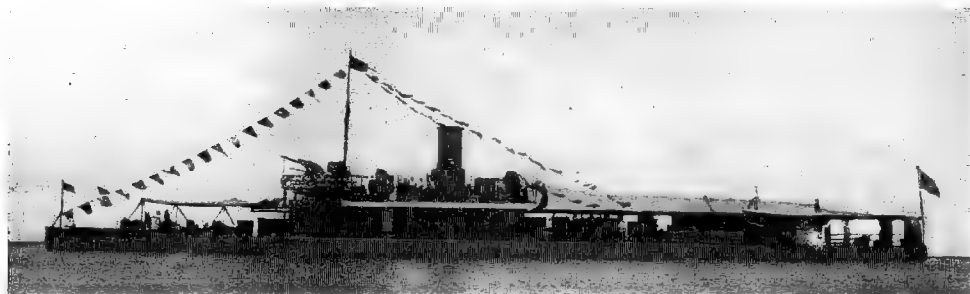
BUCOVINA (ex Austro-Hungarian *Sava*, launched 1915). Displacement, 550 tons. Dimensions: 190½ × 34½ × 4½ feet. Guns: 2—4.7 inch, 45 cal. Skoda (paired in single turret forward) + 2—4.7 inch, 10 cal. howitzers (fortress type, singly mounted in pits with cupola protection), 2—11 pdr. (AA., twin-mounted in turret), 4—3 pdr., and 6 M.G. 1—24 inch searchlight. Armour: 1½" Belt and Bulkheads, 1" Deck, 2" C.T., 2" Turret and Cupolas. 3 magazines with water-jackets and electric-controlled refrigerators. Designed H.P. 1600 = 12 kts. Boilers: Yarrow. Fuel: 75 tons, oil *only*. Complement, 90 to 100. Built under 1914-15 Austro-Hungarian Naval Programme, completed 1915. Interned at Novi Sad 1919-20 and handed over by Jugo-Slavs at Orsova early in 1921. Sister ship, *Vardar*, now unit of Jugo-Slav Danube Flotilla.

Photo wanted.

(For appearance, see *Drava*, in Serb-Croat-Slovene section.)

BASARABIA (ex Austro-Hungarian *Inn*, launched 1914). Displacement, 550 tons. Dimensions: 203½ (o.a.) × 34½ × 4½ feet. Guns: 2—4.7 inch, 45 cal. + 3—4.7 inch, 10 cal. howitzers, 2—3 pdr., 4 M.G. Armour: 1½" Belt and Bulkheads, 1" Deck, 2" Turret and Cupolas, 2" C.T. Designed I.H.P. 1700 = 12 kts. Boilers: Yarrow. Fuel: 70 tons, oil *only*. Complement, 100. Built under Austro-Hungarian 1912 Naval Programme; interned at Novi Sad 1919-20, handed over by Jugo-Slavs at Orsova early in 1921. Sister ship, *Drava*, now unit of Jugo-Slav Danube Flotilla. Has exceptionally good accommodation for a vessel of this type.

(Danube) **Monitors**—continued.

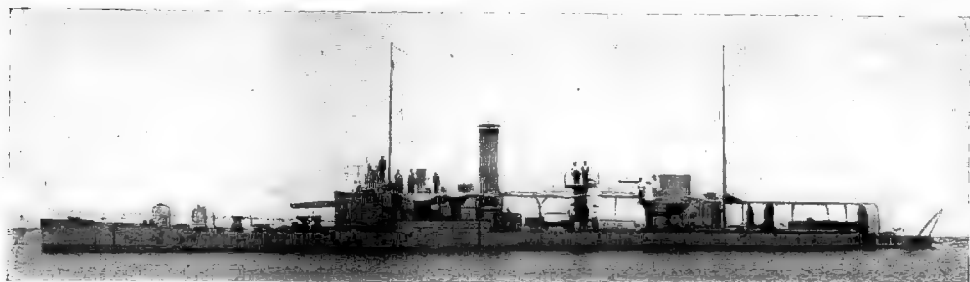


A. LAHOVARI.

1922 Photo, M. Klein.

IOAN C. BRĂTIANU (1907), **MIHAIL KOGĂLNICEANU** (1908), **ALEXANDRU**

LAHOVARI (1908), and **LASCĂR CATARGIU** (1907). Displacement: 680 tons. Complement, 110. Dimensions: $208\frac{1}{2} \times 33\frac{3}{4} \times 5\frac{1}{2}$ feet. Guns (Skoda): 3—4.7 inch, 35 cal. (2—4.7 inch howitzers removed during the War), 1—11 pdr. A.A., 2—3 pdr., 2 M.G. S.L.: 1—30.7 inch, 1—28.3 inch. Armour: 3" Belt, 3" Deck, 3"—2" Turrets. H.P. 1800 = 13 kts. Coal: 60 tons. Built by Stabilimento Tecnico Triestino, at Trieste, in sections, re-erected at Galatz. Deck cabins and military masts removed during the War. All named after 19th century Roumanian statesmen.



1922 Photo.

ARDEAL (ex-Austro-Hungarian *Temes*, 1904). Displacement: 450 tons. Complement, 80 to 90. Dimensions: $183\frac{1}{2} \times 31\frac{1}{2} \times 3\frac{3}{4}$ feet. Guns: 2—4.7 inch, 35 cal., 1—3.4 inch A.A., 2—3 pdr., 2 M.G. Armour: $1\frac{1}{2}$ " Belt, 3" and $1\frac{1}{2}$ " Turrets, $1\frac{1}{2}$ " Bulkheads, 1" Deck. H.P. 1400 = 10 kts. Fuel capacity: 60 tons. Was originally built as a sister-ship to *Sava*, of Jugo-Slav Navy. While serving on Danube as Austro-Hungarian *Temes*, she was sunk in October, 1914, but was raised in June, 1916, and entirely rebuilt 1916-17; she is thus, compared with others of the same original design, a practically new Monitor. Re-entered service April, 1917. Interned at Novi Sad, 1919-20; handed over at Orsova by Jugo-Slavs early in 1921. Easily identified by her tall, thin funnel and raised gun aft, mounted during reconstruction, 1916-17. No other Monitor exists with this arrangement, except Jugo-Slav *Morava*, and her guns are not in turrets.

(Danube) **Patrol Vessels** (*Vedete*).

Note.—All are named after Army officers who fell in the War of Independence, 1877.



(Danube.)

1922 Photo, M. Klein.

7 Major *Sontu* class: **Capitan Nicolae Lascar Bogdan**, **Capitan Romano Mihail**, **Locotenent Calănescu Dimitrie**, **Major Constantin Ene**, **Major Dimitrie Giurescu**, **Major Nicolae Grigore Ioan**, **Major Sontu Gheorghe** (Thames Iron Works, 1906). Displacement, 50 tons. Dimensions: $100 \times 13 \times 2\frac{3}{4}$ feet. Armament: 1—3 pdr. Skoda, 1 machine. 1—20 inch S.L. Some have a light steel c.t. with s.l. on top. H.P. 590 to 620 = 17.7 to 18 kts. Oil fuel: $7\frac{1}{2}$ tons. Complement, 20. Differentiated by large coloured numerals on funnels. Their two thin funnels, ram bows and round tunnel sterns make their recognition easy. *Capt. V. Marăcineanu* mined 1916.

(Danube) **Motor Launches**. (*Vedete Anti-Submarine*.)



VAS 1—VAS 5. Purchased from Italy, 1920. Displacement: 43 tons. Dimensions: $85\frac{1}{2} \times 12 \times 3\frac{3}{4}$ feet. H.P. 430 = 15 kts. Are ex-Italian M.A.S., type C, without armament. Provision for mounting 1 small gun in bows if required.

MISCELLANEOUS.

Miscellaneous—ROUMANIA

(3) (Danube.)

Royal Yacht. (*Regal Iachtul*).

STEFAN CEL MARE (ex-river passenger steamer *Orient*, 1870.)

Built by Donau-Dampfschiffahrts Gesellschaft Yard, Altona, Budapest. Dimensions: 250 × 27.5 × 4.6 feet. Paddle engines, H.P. 670 = 18 kts. Painted white, with two thin yellow funnels.

Note.—Named after the famous Moldavian Prince (1457–1504), who was victorious over the Turks and Poles.

(Danube.)

Miscellaneous Vessels.

MĂCIN (Stab. Tecnico Triestino, Linz, 1912). 200 tons. Dimensions: 139.4 × 20.3 × 4.9 feet. 2 sets Diesel engines, B.H.P. 500 = 12 kts. 2 screws. Guns: Nil. Complement, 30.

Note.—This vessel, originally a river tug, has had a deckhouse built forward, and serves as administrative flagship of the Roumanian Danube Flotilla. Painted white, with a yellow funnel.

Macin is a small town in the Dobrudja.

The Danube flotilla also includes 2 Armed River Steamers, *General Maican* and *Capitan-Comandor Paim*; two others, *Locotenent Stoicescu* and *Locotenent Vartosu*, fitted for minesweeping; 6 ex-Russian floating batteries; and a number of tugs, lighters and other small vessels.

General Note.

Of the names on this page, *Bistrita* and *Argesul* classes and *Silistra* are geographical; *Grănicerul* class are named after various military types; *Porumbita* = Pigeon, *Soimulet* = Sparrowhawk, and *Rândunica* = Swallow; motor launches bear the names of officers killed in action, 1916–18; and *Opancez* and *Rahova* were actions in the war of Independence, 1877.

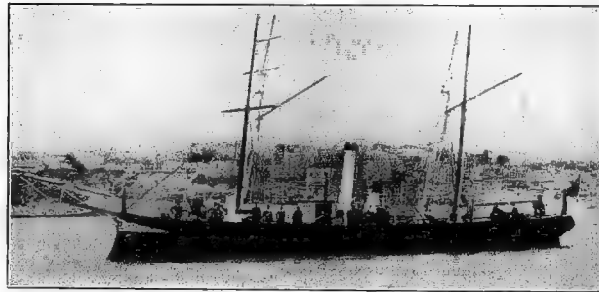
(4) FRONTIER GUARD VESSELS.

In addition to the Regular Navy, the vessels detailed below compose a separate force, with personnel detached from the regular service, under a Commander, R. Roumanian Navy. These craft are known as *Grupul de Vase ale Grănicerilor* (Group of Frontier Guard vessels). They are under the Army, but uniforms worn by personnel are the same as those of Navy, except for aiguillettes corresponding to those of Frontier Guard troops. Headquarters and base are at Braila.

(Danube.)

Police Gunboats. (*Nave de Politie*.)

(Painted grey.)



BISTRITA.

BISTRITA, OLTUL, SIRETUL (Blackwall, 1888). 95.2 tons.

Dimensions: 100 × 13 × 6½ feet. Guns: 1—6 pdr., 1—1 pdr. H.P., 400 = 12 kts. Oil: 12 tons. Complement, 20.

Police Launches (*Salupe de politie*)*

(All painted grey.)

Rândunica (Galatz, 1900). 10 tons. 46 × 7.9 × 3.3 feet. H.P. 25 = 8 kts. Oil: 1½ tons. Complement, 5.

Argesul, Teleorman, Trotus, Vedea (Schichau, Elbing, 1894). 30 tons. 65.6 × 9.8 × 4.9 feet. Guns: 1—1 pdr. Hotchkiss, 1 Nordenfelt M.G. I.H.P. 148 = 10 kts. Coal: 8 tons. Comp. 16.

Grănicerul, Pandurul, Poterasul, Santinela, Vegheatorul (London, 1882). 10 tons. 50 × 7¼ × 3½ feet. I.H.P. 25 = 10 kts. Oil: 1 ton. Complement, 5.

Porumbita

Silistra

Soimulet

} Built at Galatz Navy Yard.

* All except *Argesul* class are at present unarmed and used as Communication Tenders.

Motor Launches.

(1) For service on Lower Danube and Black Sea:—

4 boats (built by Pattison, Naples, 1921): **Maior Caracas Petre, Capitan Popescu Constantin, Capitan Constantinescu Traian, Capitan Pantulescu Eugeniu**. Displacement, 9 tons. 43 × 9 × 3 feet. H.P., 150–175 = 15 kts. Guns: 1—37 m/m. on fore deck. Built of steel. Painted white.

(2) For service on the Danube:—

8 boats: **Gr. D1, 2, 3, 4, 5, 6, 7, 8**. (Gr. = Grănicerul, i.e. Frontier Guard. D = Dunare, i.e. Danube.) Displacement, 3½ tons. 31½ × 6 × 2¼ feet. H.P., 150–175 = 20 kts. Guns: 1 M.G. Built of wood. Painted white.

(3) For service on the Dniester:—

3 boats: **Gr. N1, 2, 3**. (N = Nistru, i.e. Dniester.) Displacement, 2.2 tons. 26.2 × 5.9 × 1.9 feet. H.P., 24–35 = 10 kts. Built of wood. Painted white.

(These are Patrol Boats of no military importance).

Harbour Launches.

Opancez, Rahova, (London, 1880). 45 tons. 55¾ × 11½ × 5¼ feet. Guns: 1—1 pdr. Hotchkiss, 1 M.G. I.H.P. 100 = 8½ kts. Oil: 8 tons. Complement, 10. *Smărdan* a war loss, 1917.

RUSSIA. (NAVIES OF THE UNION OF SOVIET SOCIALIST REPUBLICS.)

RUSSIAN FLEET.

It is extremely difficult to secure accurate information regarding the Russian Navy, but the particulars given in these pages were revised and compared with data from a reliable source in 1929.

Minister of War and Marine.—K. E. Voroshilov. (Navy is administered by Komissar Muklevitch.)

Naval Flags.

Commander-in-Chief of Armed Forces : A red rectangular flag having in the centre a white square charged with a red star and round the star the letters R.S.F.S.R. in gold.

Naval Commander-in-Chief : Same as the flag of the Commander-in-Chief of Armed Forces, but with the white square in the upper canton next the staff.

Chief of Staff : Same as the Naval Commander-in-Chief's Flag, but with two crossed anchors in a white circle in the centre of the fly.

Officer Commanding the Naval Forces : A rectangular flag divided vertically into two equal parts of white and red. On the white field is a red star surrounded by the letters R.S.F.S.R.

Senior Flag Officer : Same as the flag of Officer Commanding the Naval Forces, but with a white circle in the centre of the red field.

Junior Flag Officer : Same as the flag of the Senior Flag Officer, but with two white circles in the red field.

Officer Commanding Second and Third Line Ships : A broad red pennant, having next the staff a white square charged with a red star surrounded by the letters R.S.F.S.R.

Senior Officer Afloat : A white broad pennant having next the staff a red star surrounded by the letters R.S.F.S.R.

Commander of Flotilla : A forked red flag having in the upper portion next the staff a white square charged with a red star surrounded by the letters R.S.F.S.R.

Commander of a Port : Same as the flag of a Commander of a Flotilla, but with a white anchor in the centre of the flag.

Commander of a Naval Fortress : Same as the flag of a Commander of a Flotilla, but with crossed guns in yellow in the centre of the flag.

Pendant : Red, having next the staff a white square charged with a red star surrounded by the letters R.S.F.S.R.

Mercantile Marine.

From "Lloyd's Register," 1929 figures (Ships under 100 tons gross excluded): Total gross tonnage, 440,506.

UNIFORMS.—Shoulder markings abolished, and rank is now indicated by stripes on cuff. All ranks now have gold buttons. Officers' caps have an anchor badge, on a red ground. Ranks are distinguished thus:—

Admiral : $\frac{3}{4}$ -inch top stripe with curl and three stars round curl; two 1-inch lower stripes.

Vice-Admiral : Same as Admiral but only two stars.

Kontre-Admiral : Same as Admiral but only one star, above curl.

Kapitan (I Ranga) : Same as Admiral but no stars. (British, Captain.)

Kapitan (II Ranga) : Two 1-inch gold stripes, top with curl. (British, Commander.)

Starshi Leitenant : One 1-inch or $\frac{3}{4}$ -inch top stripe with curl, and three $\frac{1}{2}$ -inch gold stripes below. (British, Lieutenant-Commander.)

Leitenant : Same as above but only two $\frac{1}{2}$ -inch gold stripes below. (British, Lieutenant.)

Mitchman : Same as above but only one $\frac{1}{2}$ -inch gold stripe below. (British, Sub-Lieutenant.)

Pra'porchik : This is an acting rank, about equivalent to Acting Sub-Lieut., in British Navy. One $\frac{1}{2}$ -inch gold stripe without curl.

Note.—The above particulars relate to changes introduced by the Kerensky Government. Under later Administrations most of these marks of rank in the Fleet and Army were abolished, but have since been restored to a certain extent.

Personnel : 23,600 (about 10,000 seagoing).

Modern Naval Guns (Obukhoff).

Notation.	Designation.	Length in Calibres.	Weight of Guns.	Weight of A.P. Shot.	Initial Velocity (approximate).	Maximum Penetration with A.P. Capped Shell against K.C. Armour.			Danger Space against average warship at			Usual Rounds per minute.
						10,000 yds.	5000 yds.	3000 yds.	10,000 yards.	5000 yards.	3000 yards.	
A ⁶	12 in.	52 calibres	48·2 tons.	714 lbs.	3000 f.s.	in. ...	in. 14½	20	yards. ...	yards. ...	yards. ...	...
D*	6	45	7½	89	2900	...	4¼	6	60	250	485	3
E*	6	45	7	89	2600	...	3¾	5	50	200	430	3
F*	5·1	55	...	...	...	...	...	...	...	...	...	...
F*	4·7	45	2½	46	2600	...	...	...	...	...	...	about 4
F*	3	60	14 cwt.	13½	2700	...	...	...	...	...	...	...
F*	3	35	12 "	13½	2600	...	...	...	...	...	...	...

* = Brass cartridge cases.

Scale: 1 inch=160 feet.

WARSHIPS RECOGNITION SILHOUETTES.

Silhouettes—(BALTIC, &c.) RUSSIA

Scale: 1 inch=160 feet.

Caspian and Volga Destroyers.



Markin type (2).

Baltic Destroyers.



Trotsky type (5)



K. Marx class (2)



MINREP class.
(Mine sweepers.)



VOROVSKY (Training Ship).



DEVIATOE YANVARYA (Mine layer).
(Khabarovsk similar).



SMOLNY.



NAROVA (Mine layer).



TREVOLET & LENINGRADSOVIET (Training Ships).



PARISKAIA-KOMMUNA class (4 ?).



AMUR (Mine layer).



KRASNAYA ZVIEZDA.



KOMSOMOLETZ (Training Ship).

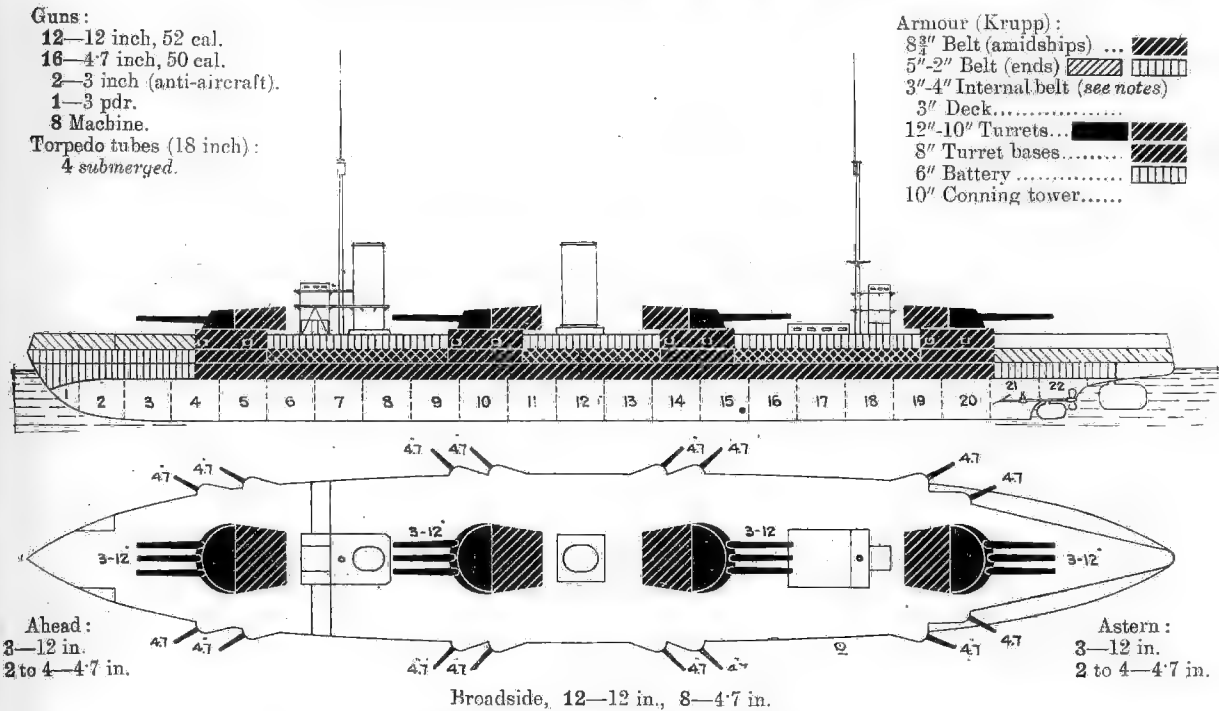


KOMINTERN.



PROFINTERN.

PARISHSKAIA-KOMMUNA (ex-Sevastopol, June, 1911), **MARAT** (ex-Petropavlovsk, Sept., 1911),
OKTIABRSKAIA-REVOLUTIA (ex-Gangut, October, 1911), **MIHAIL FRUNZE** (ex-Poltava, July, 1911).
Normal displacement, 23,370 metric tons; full load, about 26,000 tons. Complement, 1125.
Length over all, 594 feet. Beam, 87 feet. Mean draught, 27½ feet.



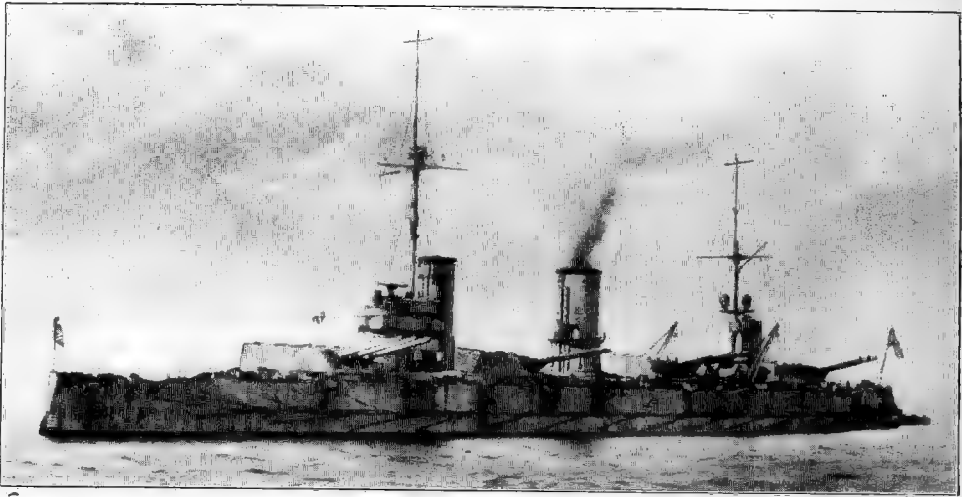
Machinery: Parsons turbine. 4 screws. Boilers: 25 Yarrow. Designed H.P. 42,000=23 kts. Coal: normal, 1000 tons; maximum, 3000 tons. Also 1170 tons oil. Radius of action: 900 miles at 23 kts., 4000 miles at 16 kts.

Gunnery Notes.—The port plate above each gun is in the form of a hinged flap, allowing each 12-inch gun to elevate to 30–40° maximum. Arcs of fire: End triple 12-inch barbettes, 310°; central barbettes, 130° each beam; aft group of 4—4.7 inch, 90°; other 4.7 inch, 85°.

Armour Notes.—Belt is about 15 feet wide, 5 feet of it below water, uniform thickness. There is a secondary 3"-4" internal belt 11 feet inboard above protective deck, extending between the end barbettes. The space between main belt and internal belts is divided up into w.t. compartments.

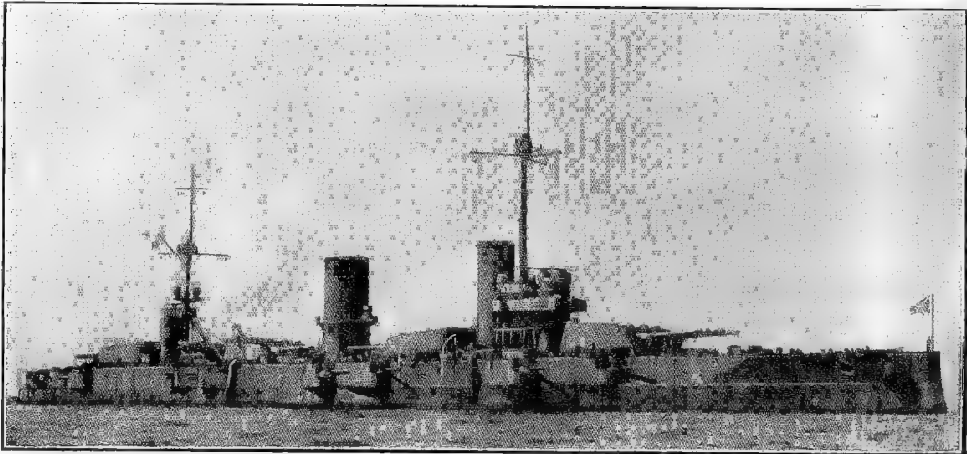
Name	Builder	Machinery	Laid down	Completed	Trials: Full power	Boilers	Best recent speed
Marat	Baltic Works	Baltic Works	June, '09	Jan. '14	About 50,000=23.4	Yarrow	20
P.-Kommuna				Jan. '15			16
Ok. Revolutia	Galernii	Franco-Rus. Works	June '09	Jan. '14	=23.6		18
M. Frunze				Jan. '15			

General Notes.—The late Gen. Vittorio Cuniberti prepared the original designs for this type. The Ministry of Marine afterwards altered the plans to include Russian ideas of armouring, ice-breaking bows and other special features. Further, to obtain a higher speed, hull design is relatively lighter than in contemporary battleships of other fleets. Said to be most unhealthy, insanitary and badly ventilated.



OKT. REVOLUTIA.

Photo added 1929 (Dmitri Norik).



OKT. REVOLUTIA. (Will be fitted with tripod foremast with Director Control.)

NOTE.—Actual fighting value of these, the only battleships left of the former Russian fleet, is problematical. All except M. Frunze are said to have been completely refitted and reboilered, 1927–28. Frunze is to be taken in hand next. It is reported that all are to be given modern fire control equipment.

CRUISERS (Kreisser).

1913 Cruiser (Minelayer).

(For appearance, see photo in adjoining column.)

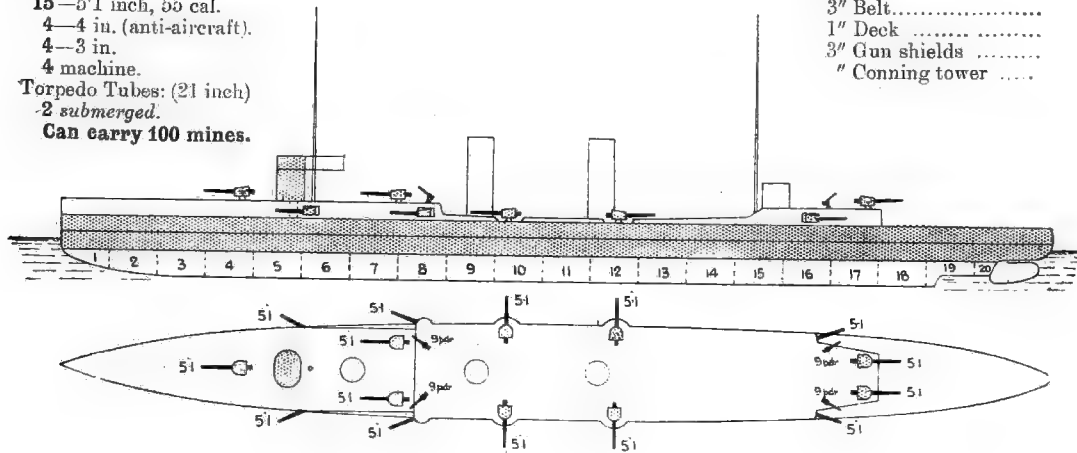
PROFINTERN (ex-Sornarkom, ex-Klara Zetkin, ex-Svietlana, June, 1915).

Displacement, 7600 tons. Complement, 624.

Length, 507 $\frac{3}{4}$ feet. Beam, 50 $\frac{1}{2}$ feet. Draught, 18 $\frac{1}{2}$ feet.

Guns:
15—5.1 inch, 55 cal.
4—4 in. (anti-aircraft).
4—3 in.
4 machine.
Torpedo Tubes: (21 inch)
2 submerged.
Can carry 100 mines.

Armour:
3" Belt.....
1" Deck.....
3" Gun shields.....
" Conning tower.....



Machinery: Brown Curtis or Parsons turbines. Boilers: 25 Yarrow. H.P. 50,000=29.5 kts. Coal: 1170 tons (with oil fuel). Radius of action: 470 miles at full speed, 3700 at 14 kts.

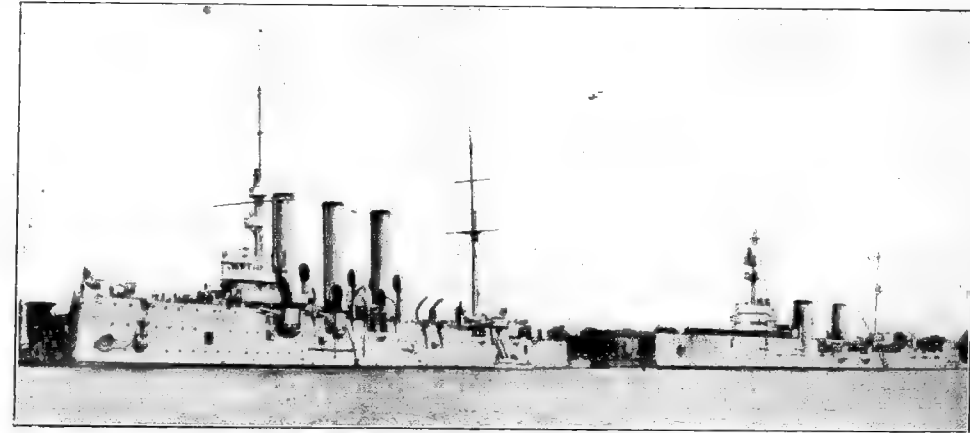
Name	Builder and Machinery.	Laid down	Completed	Present Condition.
Sornarkom	Baltic Works, Reval *	Dec. '13	Jan. '25	

General Notes.—Built under 1912 Naval Programme. 3 sister ships, *Admiral Butakov*, *Admiral Grieg*, *Admiral Spiraidov*, never completed, and have been sold as scrap or utilised for commercial purposes. Another sister ship, *Tcherronaya Ukraina*, is in Black Sea.

*Towed to Leningrad for completion, 1918.

Cruisers, etc.—(BALTIC, &c.) RUSSIA

1896 Cruiser.



S.S.S.R.

PROFINTERN.

August, 1929. Photo by favour of H. C. Bywater, Esq.

(At present Seagoing Training Ship.)

S.S.S.R.* (ex-Aurora, May, 1900). 6830 metric tons. Complement, 590. Dimensions: 410 (w.l.) × 55 × 21 $\frac{1}{2}$ feet (mean draught). Armament: 10—5.1 inch, 45 cal., 5—6 pdr. AA., 2 M.G. Formerly carried 125 mines and 2 submerged torpedo tubes (broadside). Machinery: 3 sets horizontal 3-cylinder. Designed H.P. 11,600 = 20 kts. 3 screws. Boilers: 24 Belleville. Coal: normal 960 tons; maximum, 970 tons. Complement, 573. Laid down 31 Oct., 1896; completed 1903. Still in nominally effective state, but speed reduced to 12 kts. Sister ship *Diana* has been sold for scrap.

*These initials stand for *Soyuz Sovetskiih Sozialisticheskiih Respublik*, meaning "Union of Soviet Socialist Republics."

Aircraft Tender.

(To be discarded?)

ORLITZA (ex-S.S. *Imperatritza Alexandra*, ex-S.S. *Vologda*) (1903). Built by Caledon Shipbuilding Co., Ltd., Dundee. 4500 tons. Guns: 6—3 inch A.A., 2—2 pdr. 12 planes carried. Dimensions: 290 × 40 × 25 $\frac{1}{2}$ feet. Machinery: Tripple expansion. Speed, 12 kts (?). Cylindrical Boilers. (This ship was recently reported to be non-effective and is likely to be scrapped.)

12 Destroyers. (*Eskadrenyi Minomosetz*).

Only 8 of these are reported in commission ; the others are in Reserve, and some need repairs.

Other Destroyers still exist, but are no longer of any fighting value.

No.	Type	Date	Displace- ment	H.P.	Max. speed	Coal or Oil	Comple- ment	Tubes Mines	Max. Draught
						tons			
2	<i>Karl Marx</i>	1912-23	1650	32,700	32t	150	167	9/60	9½
7	<i>Uritsky</i>	1912-23	1260	30,000	35t	400	157	9/80	9¼
3	<i>Zhelesniakov</i>	1904-7	580	6,500	25	205	105	3/25	8½

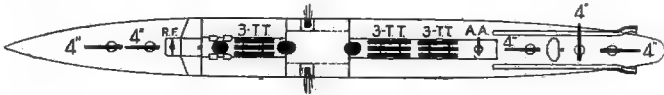
2 Karl Marx type (Mine Layers).



1919 Photo.

2 Revel Shipbuilding Co. : *Karl Marx* (ex-*Isgaslav*), *Kalinin* (ex-*Priamislav*) (1914). 1650 tons. Dimensions : 344½ × 31½ × 9½ feet. Designed H.P. 32,700 = 33 kts. (Trials reported to have given 32 kts.) Parsons turbines and Normand boilers. Armament : 4-4 inch, 2-3 inch A.A., 2 M.G. Torpedo tubes (18 inch) : 9, in 3 triple deck mountings. Oil : 150 tons. 60 mines carried. Complement, 167.

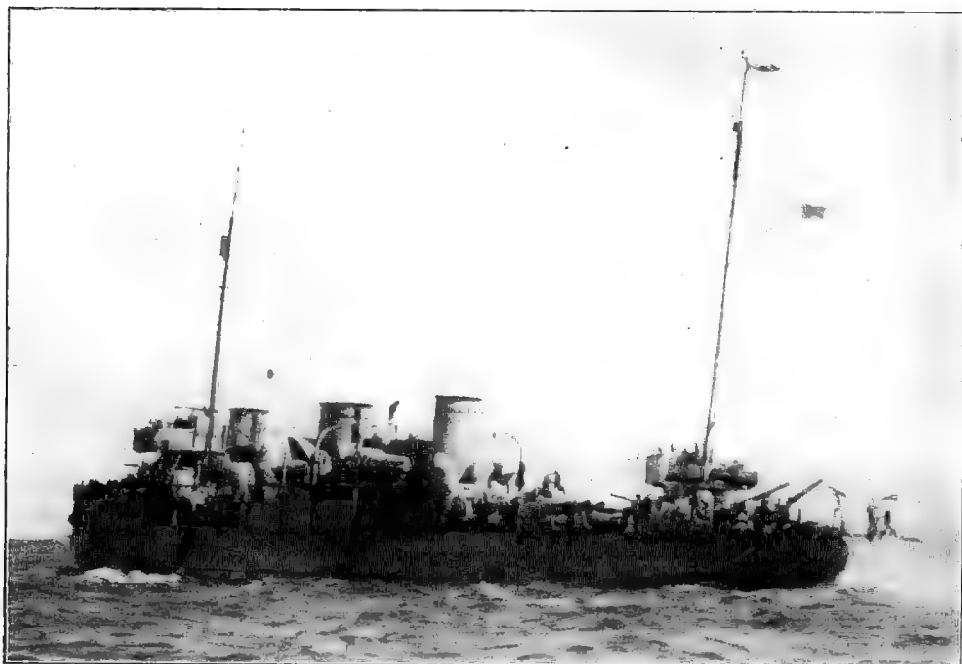
Note.—*Artroil* captured by British, now Estonian *Lennuk*. These vessels were built to the designs of Chantiers et Ateliers Augustin Normand, Le Havre.



DESTROYERS (*Eskadrenyi Minonosetz*).

Destroyers (Mine Layers)—(BALTIC, &c.) RUSSIA

7 Uritsky type (Mine Layers).



ENGELS.

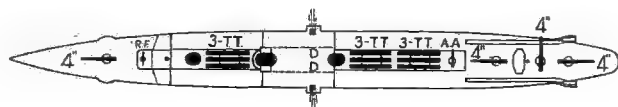
Photo added 1929 (Dmitri Novik).

5 Leningrad Metal Works : **Volodarsky** (ex-Pobieditel), **Uritsky** (ex-Zabiaka), **Zinoviev** (ex-Azard), **Engels** (ex-Desun), **Stalin** (ex-Samsun) (all 1914).

2 Putilor Works, Leningrad : **Voikoff** (ex-Trotsky, ex-Leit. Ilyin), **Lenin** (ex-Kap. 2 r. Isylmetiev). (Both 1914.)

Displacement : 1260 tons. Dimensions : 314½ × 30½ × 9½ feet. Designed H.P. 30,000 = 35 kts. (Present best speeds vary between 28 and 32 kts.) All have turbines and oil fuel only. Thornycroft boilers. Armament : 4—4 inch, 2—0 pdr. AA., 2 M.G. Torpedo tubes (18 inch) : 9 in 3 triple deck mountings. Were designed to carry 80 mines of pre-war pattern ; believed that they now have only 45, of heavier type. Complement, 157. Oil : 400 tons. 1912 Programme. Built 1914—1918.

Note.—**Spartak**, ex **Miklukha Maklej**, ex **Kapitan Kinsbergen**, captured by British and now Estonian **Wambola**. **Lenin** at present refitting. Others of this class that may still exist, but which have no military value, include **International** (ex-Rymnik), **Pamiat Troh Esminizev** (ex-Mikhail), **Rykov** (ex-Leitun) and **Orphei**.

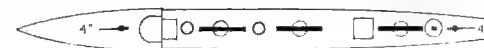


3 Zhelesniakov type (Mine Layers).



3 Zhelesniakov class, named **Gaidamak**, (Krupp Germania Yard, Kiel, 1905), **Zhelesniakov** (ex-Amuretz, Riga, 1905), **Ussurietz** (Helsingfors, 1907). 570 tons. Dimensions : first ship, 233 × 24.2 × 7.5 feet, other two 233 × 23.6 × 7.8 feet. Designed H.P. 6500 and 6200 respectively = 25 kts. Coal : 205 tons. Complement, 105. Guns : 2—4 inch, 1—3 pdr., 1—1 pdr. AA., 4 M.G. Tubes : 3—18 inch. Carry 25 mines.

Note.—Some or all of these 3 boats are destined for service in Far Eastern waters, when repairs, etc., are completed. Present best speeds : 22-24 kts. **Sladkov**, of this type, reported scrapped or non-effective.



Note.—The Torpedo Boat **Roshal** (ex-Krepki) has been removed from Effective List. The ex-Torpedo Boat **Ing. Meeh. Dmitriev** (now a Minesweeper), of 355 tons, is understood to have been renamed **Roshal**. Other new names reported for boats of this class (listed under Minesweepers, on a later page) are **Artemiev** (ex-Vinostivi), **Martinov** (ex-Vnushitelni) and **Zhemchuzni** (ex-Ing. Meeh. Seveff).

RUSSIA (BALTIC, &c.)—Submarines & Gunboats.

SUBMARINES AND GUNBOATS.

8 + 3 (building or completing) Submarines (*Podvodniya Lodki*.)

No.	Type	Date	Dis- place- ment.	H.P.	Max. speed kts.	Fuel tons	Tubes and Gear	Com- ple- ment	Max. draught
3	<i>Dekabrist</i>	<i>Bldg.</i>	850		$\frac{15}{10}$	..	10	..	..
1	<i>Rabotchi</i> (B)	1912-17	$\frac{850}{784}$	$\frac{2640}{900}$	$\frac{16}{9}$	40	4	50	12½
1	<i>Proletari</i> (B)			$\frac{2640}{900}$	$\frac{16}{9}$	40	12	50	12½
6	<i>Bolshevik</i> (B)			$\frac{500}{900}$	$\frac{10}{9}$	40	8	50	12½

(B)=Bubnov type. (LA)=Laurenti-Ansaldo type.

New Construction.

3 boats: *DEKABRIST*, *NARODOVLETZ* (both 1929, and a third unnamed, reported to be under construction at the Baltic Yard, Leningrad. Surface displacement: 850 tons. Dimensions: 279 × 23 × 16½ feet. Guns: 1—4 inch. Tubes: 10. Speed: $\frac{16}{9}$ kts. Radius on surface: 7000 miles at 9 kts.; submerged 105 miles at 5 kts. A fourth vessel of this type reported lost on trials, Sept., 1927.

N.B.—It is possible these are identical with the *Bubnov* boats, B 1—4, ordered from the Baltic Works during the War. The Soviet Navy Department is credited with the intention of ordering 10 more submarines in the near future, to replace worn-out craft at present in service.

8 Bubnov Type.

(Dimensions of all: 223 × 14½ × 12½ feet.)

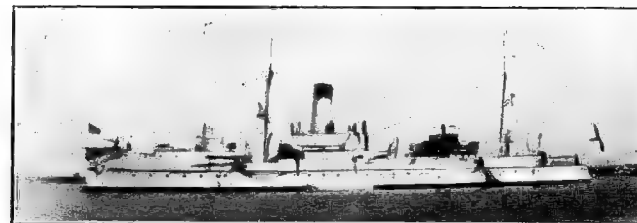
1 Special boat: *Rabotchi* (ex-*Fersh*) (Nobel & Lessner, Reval, 1912-17). Minelayer. Guns: May carry 1—14 pdr. AA., 1 M.G. Tubes: 4. Carries 42 mines.

1 *Edinorog* type: *Proletari* (ex-*Zmieya*) (Nobel & Lessner, Reval, 1912-17). Guns: 1—14 pdr. AA., 1 M.G. Tubes: 4. Dropping gears, 8. (Reported no longer effective.)

6 *Bolshevik* type: *Bolshevik* (ex-*Russ*), *Komissar* (ex-*Pantera*), *Kommunar* (ex-*Tigr*), *Krasnoflotetz* (ex-*Yaguar*), *Krasnoarmeyetz* (ex-*Leopard*), *Tovarishch* (ex-*Tur*). All built by Nobel & Lessner, Reval, 1915-16. Guns: 1—14 pdr. AA., 1 M.G. Tubes: 4. Dropping gears: 8.

Note.—*Kommunar* and *Tovarishch* are both under repair, and it is doubtful whether the former can be made serviceable again. *Batrak* (ex-*Volk*) is understood to be worn out, and is not listed above. *Kommunist* (White Sea) has been scrapped, and is deleted from this edition.

Armoured Gunboat.

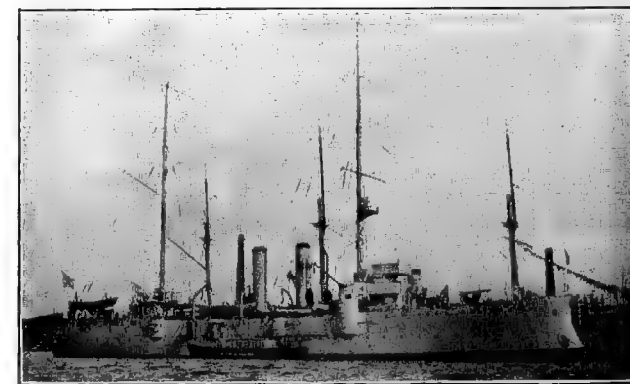


KRASNOYE ZNAMYA (ex-*Khrabri*, 1895). 1740 tons. Complement, 197. Guns: 7—5.1 inch, 55 cal. 2—3 pdr. Armour: 5" Harvey, waterline belt amidships, 3" ditto aft. Designed H.P. 2000=14 kts. Niclausse boilers. Coal: maximum, 160 tons. Built by Burmeister & Wain, Copenhagen.

Note.—Re-fitted and re-armed for service as Gunnery School Tender, 1916.

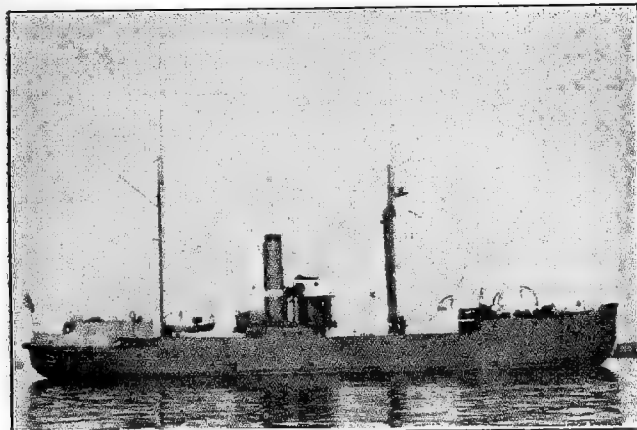
Gunboat.

(Employed for Training purposes).



KRASNAYA ZVIEZDA (ex-*Khivinetz*) (1905). Displacement, 1340 tons. Comp. 161. Guns: 2—6 inch, 8—3 inch, 2—3 pdr. AA. Machinery: Triple expansion. 2 screws. Boilers: 8 Belleville. Designed H.P. 1400=13½ kts. Coal: normal, 100 tons; maximum, 190 tons. (Re-fitted 1916.)

Repair Ships.



KRASNI GORN (ex-Kama, 1911). 1982 tons. Dimensions: $237\frac{1}{2} \times 36 \times 12$ feet. I.H.P. 1250 = 10 kts. Coal: 170 tons.

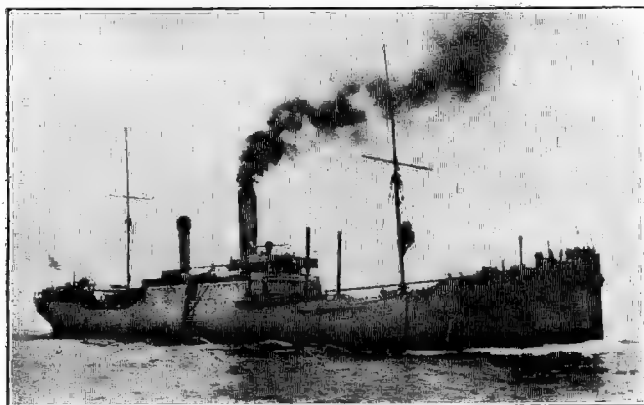


Photo added 1929.
SERP-I-MOLOT (ex-Angara, ex-Anegara Maru, ex-Angara, ex-Moskva) (Clydebank, 1898). 11,700 tons. Dimensions: $508 \times 58\frac{1}{2} \times 24$ feet. Guns: not known. H.P. 12,500 = 20 kts. Boilers: Original 24 Bellevilles have long been worn out and are probably replaced. Coal: 800 tons.

Submarine Depot Ships.

KOMMUNA (ex-Volkhov, Putilov, 1913). 2400 tons. Dimensions: $315 \times 69 \times 11\frac{1}{2}$ feet. Diesel engines. H.P. 1200 = 10 kts. Radius 3600 miles. Can raise 1000 tons.

Note.—Carries all essential stores for submarines (oil fuel, reserve accumulators, &c.), and has compressed air, distilling and charging plant, workshops, &c. At present in need of refit.

M. L. & FLEET AUXILIARIES.

Submarine Depot Ships.—continued.



KHABAROVSK (1895). 2830 tons. H.P. 1800 = 12.5 kts. Guns: 2—11 pdr., 2—3 pdr., 2 M.G. Coal: 390 tons. Complement, 132. (Present best speed is 10 kts.)

SMOLNY (ex-Tosno) (Hull, 1907). 3200 tons. Dimensions: $318 \times 41 \times 18$ feet. H.P. 1,200 = 13 kts. (only good for 10 kts. now). Guns: 4—3 pdr. Coal: 390 tons.

Mine Layers.

Note.—Also v. Destroyer and Submarine pages for vessels of these types fitted as Mine Layers.

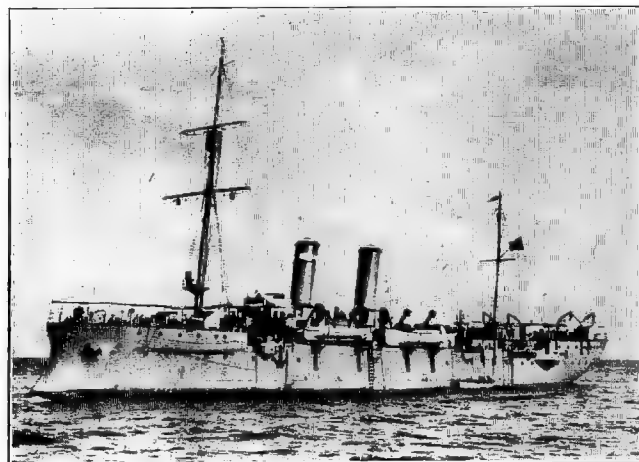


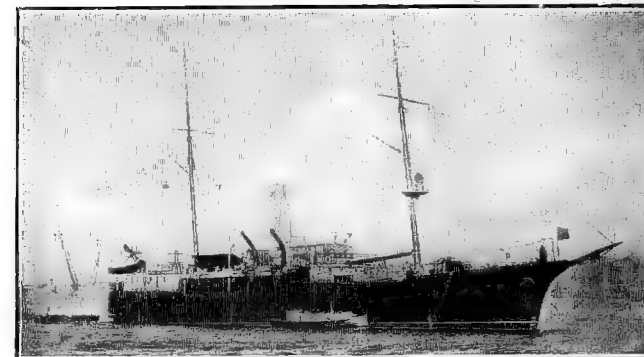
Photo added 1929.
AMUR (1907). 3608 tons. Complement, 318. Dimensions: $320 \times 46 \times 14\frac{1}{2}$ feet. Armament: 5—4.7 inch, 2—3 inch (AA?) H.P. 4700 = 17 kts. Boilers: 12 Belleville. Coal: 670 tons. Carries 320 mines. *Vencessei* of this type lost in the war. Present best speed, 14 kts.

DEVIATOE YANVARYA (ex-Volya, 1905). 1711 tons. Complement, 266. H.P. 1600 = 13 kts. Babcock boilers. Armament: 4—3 pdr. Carries 236 mines. Coal: 160 tons. Present best speed, 10 kts.

(For photo see next column.)

M. L. & F. A.—(BALTIC, &c.) RUSSIA

Mine Layers—continued.



DEVIATOE YANVARYA.



NAROVA (ex General Admiral, 1872). 5030 tons. Speed: about 9 kts. Guns: 4—3 inch, 4 M.G. Complete 6" iron belt. Carries 600 mines.

Mine Sweepers.

ISKRA, IJORA (ex Plamya), **TRETI INTERNATIONAL** (ex Patron, Middlesborough, 1913-14). 500 tons. Dimensions: $146 \times 24\frac{1}{2} \times 10$ feet. Guns: 2—11 pdr. H.P. 650 = 11 kts.



MINREP. (Now has a main mast.)

FUGAS, MINREP, PROVODNIK, ZAPAL (1911). 150 tons. Guns: 2—3 pdr. H.P. 300 = 10 kts. Also about 14 Trawlers and other small craft, including ex-Torpedo Boats, *Artemiev* (ex-Vinoslivi), *Martinov* (ex-Vnushitelni), *Roshal* (ex-Dmitriev) *Zhemshuzni* (ex-Sverev), are fitted as Sweepers.

RUSSIA (BALTIC, &c.)—Auxiliaries.

Despatch Vessels.

Razvyedchik and **Dozornii** (both 1904). 100 tons. Complement, 23. Guns: 1—1 pdr., 1 machine. Speed, 16 kts. Both refitted 1915-1916.

KRETCHET (ex-S.S. *Polaris*, of Finnish S.S. Co.) (Dundee, 1899). 2011 tons gross. Guns: 4—3 inch AA. H.P. 2500=12 kts. Cylindrical boilers.

Note.—*Kretchet* at present serves as Administrative Flagship and Staff Headquarters for Baltic Fleet.

SHESTNADZATAVO OKTABRYA (ex-*Yastreb*). 150 tons. Speed 10 kts. No details available.

PIONIR (ex-*Korshan*), **KOPCHIK**. 500 tons. Speed: 12 kts. Guns: 2—4 inch.

A number of motor patrol boats also exist, but details are uncertain. 15 new vessels of C.M.B. type are projected, but it is not known definitely whether any have been begun.

Icebreakers.

(Illustrated in 1921 "Fighting Ships.")

LEONID KRASSIN (ex-*Sviatogor*, Armstrongs, 1917). 10,000 tons. Dimensions: 323 (o.a.) × 71 × feet. H.P. 10,500 = 16 kts. 10 cylindrical boilers. 3 screws. Complement, 110.

LENIN (ex-*Aleksandr Nevski*, Armstrongs, Dec., 1916). 5700 tons. Dimensions: 264 (o.a.) × 61 × feet. H.P. 6600 = 15 kts. 8 cylindrical boilers. 2 screws.

(Illustrated in 1921 "Fighting Ships.")

YERMAK (Armstrongs, 1898). 8000 tons. Dimensions: 320 (o.a.) 305 (p.p.) × 71 × 25 feet. 1½ steel belt. H.P. 7500 = 16 kts. Coal: 3000 tons.

AUXILIARIES.

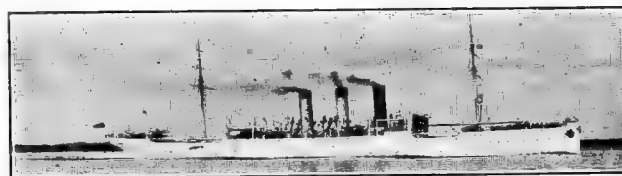
Training Ship for Cadets.



1924 Photo, Abrahams, Devonport.

VOROVSKY (ex-*Yaroslavna*, ex-yacht *Lysistrata*, built by Denny, Dumbarton, 1900). 2089 tons (yacht measurement), 1900 tons (registered). Dimensions: 285 (p.p.), 319 (o.a.) × 40 × 18 feet. Engines: Triple expansion. 2 screws. H.P. 3500 = 18 kts. Guns: 2—4.7 inch., 2—3 pdr., 2 M.G. Complement: 127. (In Far East).

Engineers' Training Ship.



(And Transport.)

KOMSOMOLETZ (ex-*Okean*, Howaldt, 1902). 11,900 tons. Guns: 4—3 pdr. H.P. 11,000 = 18 kts. Coal: 1600 tons. Boilers: 6 Belleville, 6 Niclausse, 3 Yarrow, 2 Thornycroft. Complement, 700.

Torpedo and Submarine School Ships.



TREVOLEV (ex-*Voin*, 1893). 1280 tons. Guns: 4—3 inch. Speed, 9 kts.

LENINGRADSOVIET (ex-*Petrosviet*, ex-*Vierny*, 1895). Similar to *Voin* in main features.

Note—Former Torpedo School Ship, *Nikolaiev*, has been sold for scrap.

Transport.

(Appearance as *Krasnii Gorn*.)

KRASNII LENINGRAD (ex-*Sukhona*, 1911). 1982 tons. Dimensions: 237½ × 36 × 12 feet. I.H.P. 1250 = 10 kts. Coal: 170 tons.



TCHERVONAYA UKRAÏNA.

1928 Photo.

TCHERVONAYA UKRAÏNA (ex *Admiral Nakhimoff*, Oct., 1915). Displacement, 7000 metric tons. Complement, 624. Length (waterline), 507 feet. Beam, 49½ feet. Draught, 18½ feet. Length (over all), 519½ feet. Guns: 15—5.1 inch, 55 cal. 4—3 inch A.A. 4 machine. Torpedo tubes (18") 2 submerged. Can carry 100 mines. Armour: 3" Belt, 1" Deck, 3" Gun Shields. Machinery: Curtis turbine. 4 screws. Boilers: 14 Yarrow. Designed H.P. 55,000 = 29.75 kts. (trials, 26 kts.); Coal 540 tons. 690 tons Oil. (Plans as *Sornarkom*, Baltic section.)

Name	Builders	Laid down	Condition.	Boilers	Best recent speed.
<i>Tch. Ukraïna</i> .	Nikolaïeff†	Nov. '13	Completed 1924, and in service.	Yarrow	26

General Notes.—Sister ship to *Sornarkom*, described on a previous page in Baltic Section.
†Begun by Russian S.B. Co., Nikolaïeff, continued by Nikolaïeff S.B. & Engineering Co., and towed to Odessa, February, 1920, for completion. Three other ships of this type, *Admiral Lazareff*, *Ad Korvilloff*, *Ad Istomin*, still exist in an incomplete state. Work is stated to have been resumed on the first-named, but it is believed the construction of the remaining two has been abandoned.



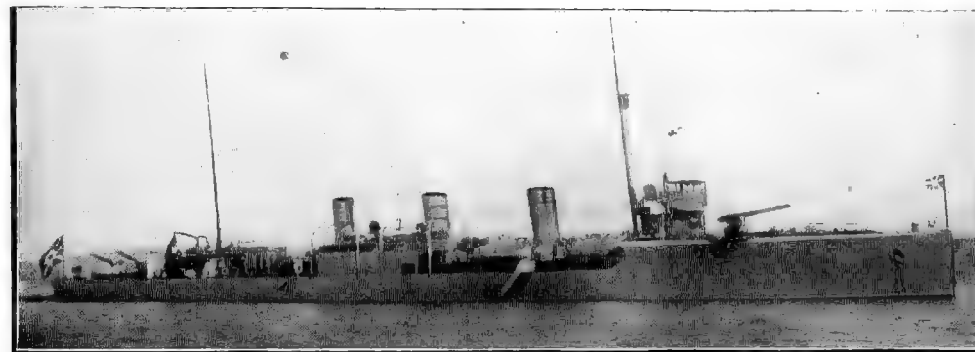
KOMINTERN.

Photo added 1925.

KOMINTERN (ex *Pamiat Merkuria*, ex *Kagul*, June, 1905). 6750 tons. Dimensions: 436 × 54 × 20½ feet. Complement, 573. Guns: 14—5.1 inch, 4—3 inch A.A., 2 M.G. Torpedo tubes: 2—18 inch (submerged). Armour: 1"—3" deck, turrets and casemates. Machinery: Triple expansion. 2 screws. Boilers: 16 Normand. Designed H.P., 19,500 = 23 kts. Coal: normal 700 tons, maximum 1100 tons. Refitted and rearmed, employed as sea-going training ship.

4 Destroyers. (Eskadrenyi Minonosetz.)

Frunze (ex *Bistri*, 1915), (Refitted and rearmed 1923). 1100 tons. Complement, 156. Dimensions: 321½ × 30½ × 12½ feet. Armament: 4—4 inch, 2—6 pdr. A.A., 6—18 inch tubes, 80 mines. Boilers: 4 Thornycroft. 2 screws. Oil: 350 tons.



PETROVSKI.

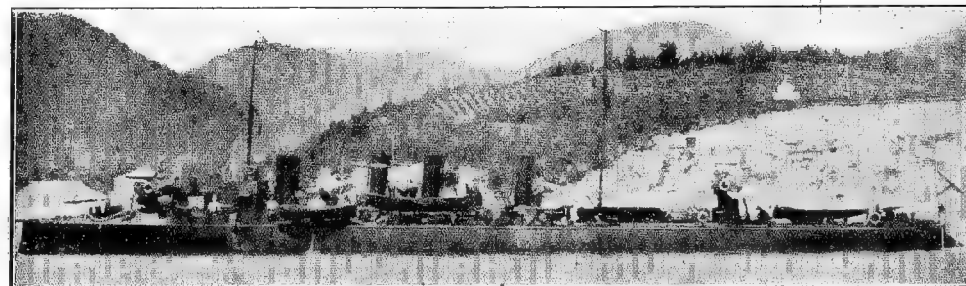
Plans as "Karl Marx" Baltic Section, but without 4 inch guns before mainmast. 1928 Photo.

3 boats: **Nezamoshnik** (ex *Zante*, 1917), **Petrovski** (ex *Korfu*, 1917), **Shaumyan** (ex *Levkos*, 1917). All built at Nicolaïeff. 1430 tons. Dimensions: 303½ × 29½ × 9 feet. Armament: 4—4 inch, 4—9 pdr. 1—9 pdr. A.A., 12—18 inch tubes, in triple deck mountings. Originally designed to carry 80 mines of pre-war pattern, but will now have 45 of heavier type. Turbine engines. Oil fuel only: 390 tons. S.H.P. 29,000 = 33 kts. Complement, 161. *Note.*—A non-effective vessel of this type, *Felice Dzhersinsky* (ex *Kaliakrya*), reported to be now under refit.

3 Torpedo Boats. (Minonosetz.)



1 *Laid* type: **Marti** (ex *Zavidni*, 1905). 420 tons. Dimensions: 210 × 21 × 6½ feet normal draught, 7½ feet maximum draught. H.P., 5,700 = 26 kts., originally. Boilers: 4 Yarrow. Fuel: 90 tons coal + oil. Armament: 2—11 pdr., 2 M.G., 2—18 inch tubes. 18 mines.



2 Yarrow type: **Badina** (ex *Strogli*), **Schmidt** (ex *Svirepi*, 1901). 300 tons. Dimensions: 190 × 18½ × 5 feet. Coal: 70 tons. Guns: 2—11 pdr., 2 M.G. Tubes: 2—15 inch. Carry 12 mines. H.P., 3,800 = 26 kts., originally. Employed as tenders at Sevastopol. *Schmidt* refitted 1923. *Badina* reported non-effective. *Note.*—*Marti* also reported as ex *Svirepi* and *Schmidt* as ex *Zavidni*.

4 Submarines. (Podvodniya Lodki.)

(As Chilean and Italian II Classes and U.S. H4—9 class).

3 Holland type: **AG 23**, (*Shakhter* ex-*Nezamuzhnyaya*) 1916—1920; **AG 24** (*Kommunist*) 1916—1922; **AG 25** (*Marxist* ex-*Kamenev*) 1916—1922. Displacement: 375—467 tons. H.P. 480=13 kts. on surface, 320=11 kts. submerged. Guns: 1—6 pdr. 4—18 inch tubes. Dimensions: 150½ × 15½ × 15½ feet. **AG 26** may also still exist under name of *Politrabotnik* but is non-effective.

1 Improved *Bubnov* type: **Politrak** (ex-*Nerpa*, 1911-15). Displacement: 650/784 tons. Dimensions: 220 × 14½ × 12½ feet. H.P., 560=10 kts. on surface, 1400=11.7 kts. submerged. Fuel: 21 tons. Guns: 2—3 inch, 1—6 pdr. Tubes: 4. Dropping gears: 4.

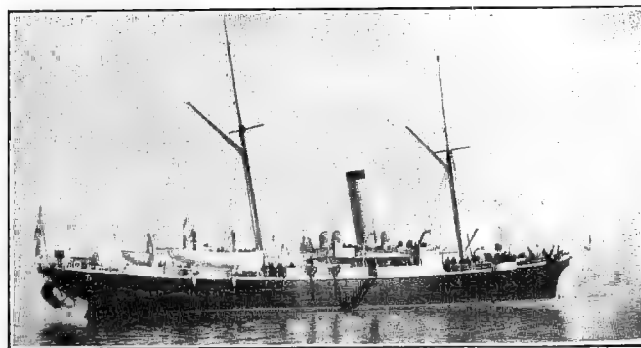
Gunboat.



Photo added, 1922.

ZNAMYA SOZIALISMA (ex-*Teretz*, 1887), 1295 tons. Complement, 135. Guns: 5—5.1 inch., 2—3 inch. H.P., 1500=11 kts. Boilers (new in 1904-6): Belleville. Coal: 220-237 tons. Present condition doubtful.

Mine Layer.



PERVOE MAYA (ex-*Dunai*, 1891). 1620 tons. Complement, 234. Guns: 3—3 inch, 2 M.G. Speed: 13½ kts. Coal: 130 tons. Carries 350 mines. Present efficiency questionable.

Submarine Depôt and Repair Ship.

(Illustrated in 1921 "Fighting Ships").

SOVIETSKAYA ROSSIA (ex-*Beresan*, ex-*Petersburg*, 1870). 3050 tons. H.P. 2700.

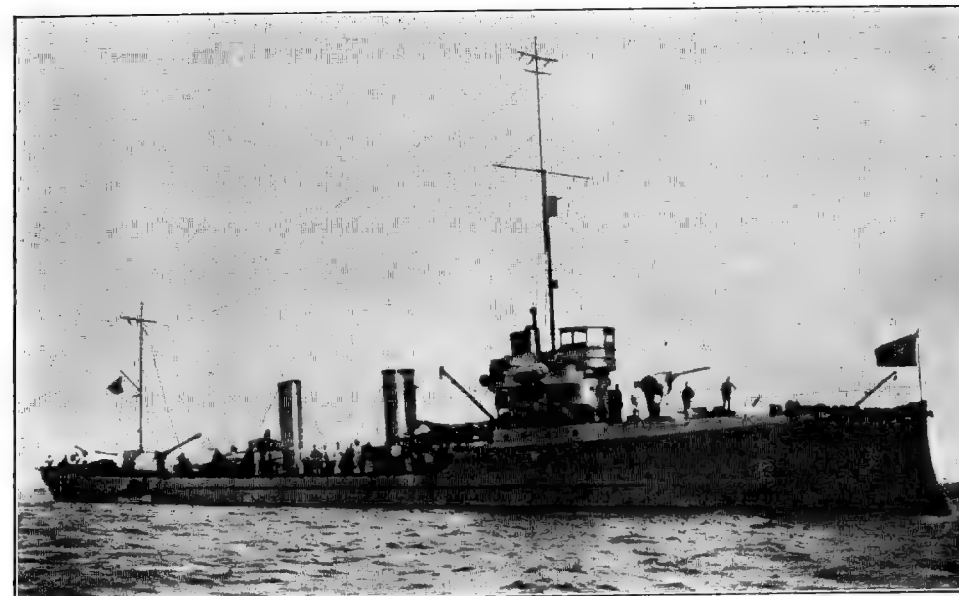
Miscellaneous.

A number of other vessels such as Sloops and Despatch Vessels, are also in commission in Black Sea ports, though of no fighting value. These include the ex-Torpedo Boat **LIETCHIK** (employed as Aircraft Tender), **KRASNI KOMANDIR** and **KRASNI MORIAK**. The last-named is serving as the Yacht of the Commander-in-Chief of the Black Sea Fleet.

CASPIAN AND VOLGA FLOTILLA.

Destroyers.

3 Markin type (Mine Layers).



BABINSKY RABOTCHY.

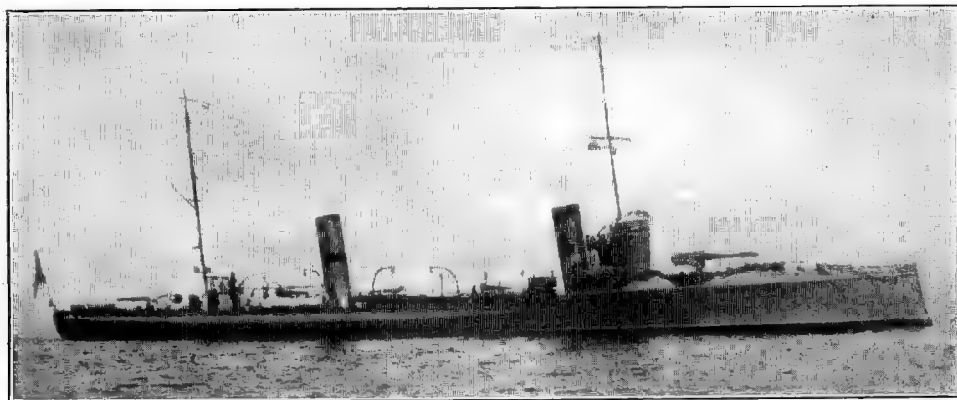
Photo, Dmitri Norik (added 1920).

3 "Markin" class, named **Alfater** (ex-*Turkmenetz-Stavropolski*), **Markin** (ex-*Chyaina*) **Babinsky Rabotchy** (ex-*Voiskovoi*) (all 1904). Built by Lange's Yard, Riga. 580 tons. Dimensions: 240 × 23½ × 7½ feet. Designed H.P. 6200=25 kts. Boilers: 4 Normand. Coal: 50 tons normal, 135 tons full load. Complement, 88-85. Armament: 3—4 inch, 1—1 pdr., 2 M.G., and 2 torpedo tubes (18"). Carry 16 mines.

Present Speeds: *Markin*, 23 kts. *Alfater* (Senior Officer of Caspian Flotilla), 20 kts. *Babinsky Rabotchy* probably less.

CASPIAN AND VOLGA FLOTILLA—continued.

2 Sverdlov Class.



Y. SVERDLOV.

Photo, Association Navale Historique Russe (added 1929).

Yakov Sverdlov (ex-*Emir Bukharski*), **Karl Liebrecht** (ex-*Finn*, Hel싱fors, 1904-5.) 580 tons. Dimensions: 237½ × 26½ × 7½ feet. Complement, 94. Designed H.P., 6,200=25 kts., (less now). Coal: 150 tons. Armament: 3—4 inch, 3—18 in. tubes. Can carry 25 mines.
Note.—There are also 8 more destroyers as well as 3 submarines, in existence in Caspian ports, but none of them can be regarded as effective for fighting purposes.

Despatch Vessels.

AZIZ BEKOV (ex-*Astrabad* 1900). 325 tons. 125 × 22 × 7½ feet. Guns: 5—3 pdr. H.P. 500=11 kts.

TRUD (ex-*Geok Tepe*, 1883). 1000 tons. Guns: 4—4 pdr. Speed: 11 kts. Employed as Station Ship.

AMUR FLOTILLA.

River Gunboats.

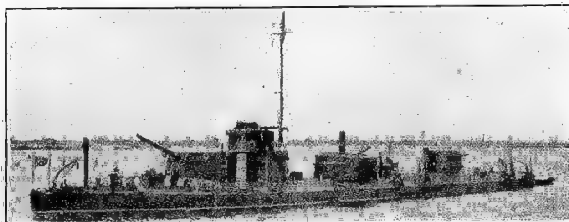


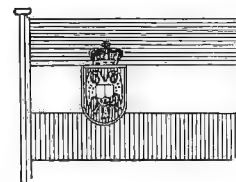
Photo: "Motor Ship & Motor Boat."

LENIN, KRASNIIVOSTOK (ex-*Trotsky*) (1910). 950 tons. Complement, 104. 233 × 42½ × 4½ feet. Guns: 4—4.7 inch, 6 M.G. Armour: 4½ inch turrets. Machinery: Nobel-Lessner Diesel motors. H.P. 1000 = 11 kts.

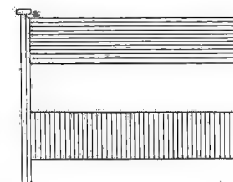
KRASNOYE ZNAMYA, TRUD (ex-*Biednota* 1907). 190 tons. 164 × 27 × 2 feet. Guns: 2—4.7 inch, 2 M.G. Designed H.P. 500 = 11 kts. Fuel: 145 tons.

Gunboats—RUSSIA
JUGO-SLAV FLEET

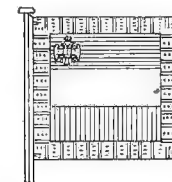
NAVY OF THE SERB-CROAT-SLOVENE KINGDOM.
(ROYAL JUGO-SLAV NAVY.)



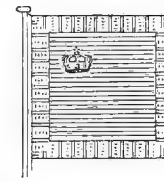
ENSIGN



MERCANTILE



MINISTER OF WAR
AND MARINE



REAR-
ADMIRAL

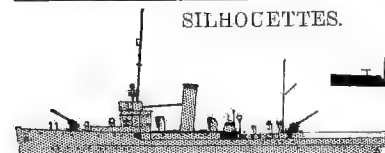
Red
 White
 Blue
 Yellow



PENNANT

Minister of War and Marine:—General Hajitch.
 Commander-in-Chief of Fleet:—Vice-Admiral D. Pritza.
 Personnel: 256 officers. 2,000 petty officers and men.
 (Reserve): 164 officers. 570 petty officers and men.

Mercantile Marine. From "Lloyd's Register," 1929. Total gross tonnage, 281,396.



GALEB class.

SILHOCETTES.

Nos. T1—T4.

Nos. T5—T8.

Nos. T9—T11.

Flotilla Leader.

A large flotilla leader was ordered in Aug., 1929 from Messrs. Yarrow & Co. Ltd. She will have geared turbines and the latest type of Yarrow boilers and will be considerably bigger than the Dutch *De Runjer* type. No other data available.

Cruiser (Used for training purposes.)



DALMACIJA.

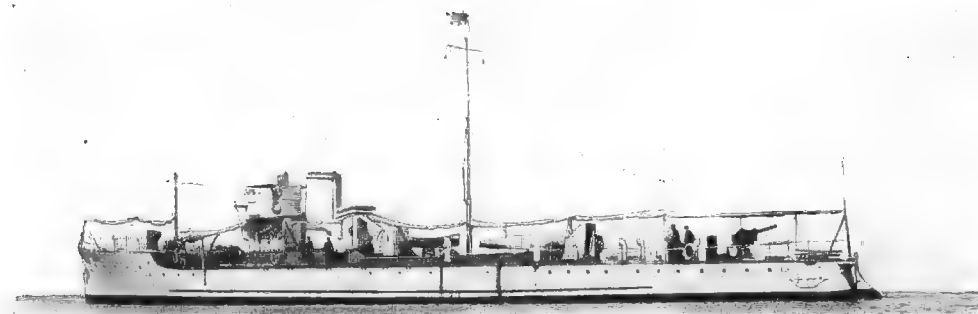
1928 Photo, Lieut. R. H. S. Rodger, R.N.

DALMACIJA (ex German *Niobe*, Weser Yard, 18th July, 1899). Displacement: 2600 tons. Dimensions: 342½ × 38½ × 17½ feet (max. draught). Guns: 6—3.3 inch, 55 cal. (83 m/m) A.A. These are guns of a new and powerful Skoda model, with a maximum range of 18,000 yds. Torpedo tubes: originally carried 2—19.7 inch, above water. Armour (Krupp): 2" deck (amidships), ¾" deck (ends), 3½" glacis to engine room hatches, 3" C.T. Machinery: 2 sets 4-cylinder triple expansion, 2 screws. Boilers: 5 Schulz-Thornycroft. Designed H.P. 8000=21 kts. Coal, normal, 380 tons; maximum, 580 tons.

Note.—Purchased from German Government in 1926 and underwent extensive refit and alterations.

JUGO SLAV FLEET.

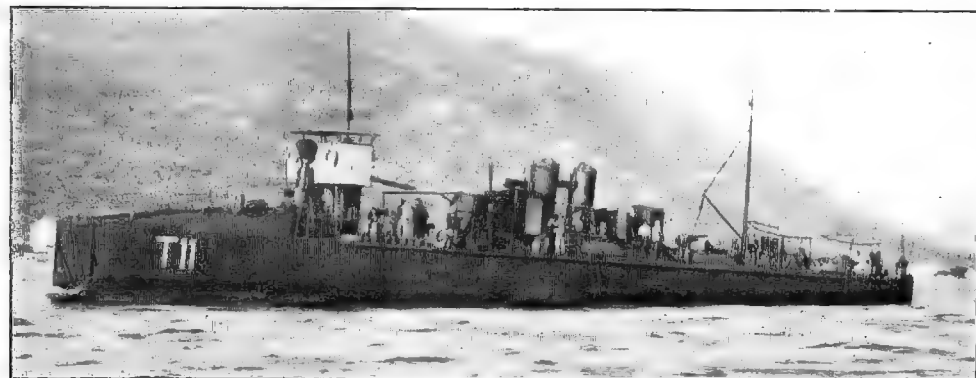
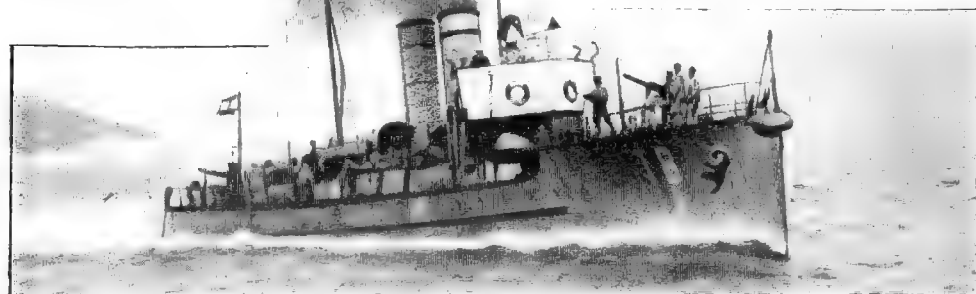
12 Torpedo Boats (*Torpiljарke*) (ex-Austrian).



1922 Photo, M. Klein.
4 Ex-Austrian boats: **T1-T4** (ex-*76T-79T*, Stab. Tecnico, Trieste, 1913-15). Displacement: 262 tons. Fuel: 18 tons coal, 21 tons oil.

4 Ex-Austrian boats: **T5-T8** (ex-*87F, 93F, 96F, 97F*, Ganz-Danubius Co., Porto Ré, Fiume, 1913-15). Displacement 266 tons. Fuel: 20 tons coal, 34 tons oil.

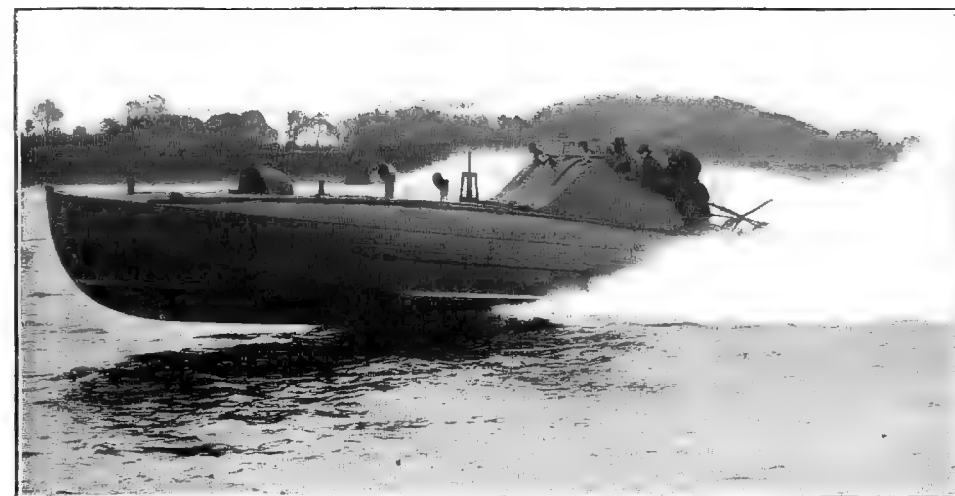
Details of all above.—Dimensions: 183.3 × 18.7 × 4.9 feet. Guns: originally armed with 1—11 pdr., 1—11 pdr. A.A. and 1 M.G. Torpedo tubes may have been removed. Designed H.P. (turbines): 50,000—28 kts. (24 reported best speed now) Yarrow boilers.



1924 Photo, by courtesy of the Navy Dept.
3 Ex-Austrian boats: **T9-T11** (ex-*14T, 60T, 61T*, Stab. Tecnico, Trieste, 1906-7, and **T12** (ex-*69F*), Ganz-Danubius Co., Porto Ré, Fiume, 1908-9). Displacement: 200 tons. Dimensions: 180 × 18 × 4.4 feet. Guns: 4—3 pdr., 1 M.G. Torpedo tubes may have been removed. H.P. 3000—27 kts. Yarrow boilers. Fuel: 47 tons.

TORPEDO BOATS.

2 Coastal Motor Boats.

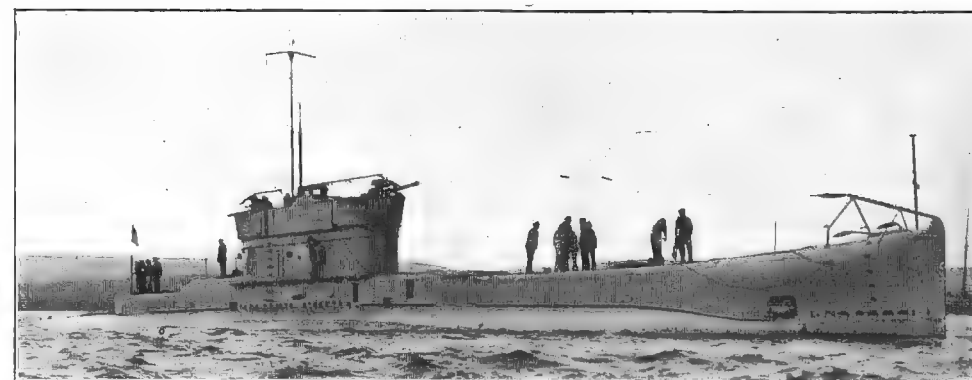


TC 1.

1927 Photo, by courtesy of Messrs. Thornycroft.

TC 1, TC 2. Delivered by Messrs. John I. Thornycroft & Co., Ltd., in May, 1927. Dimensions: 55 × 11 feet. Machinery: 2 Thornycroft motors of 375 H.P. each = 37 kts. *nominal* (40 kts. actually obtained). Auxiliary engine fitted for cruising, equal to 800 miles radius. 2 Lewis guns, 2—18 inch torpedoes. 4 D.C., and smoke floats.

4 Submarines.

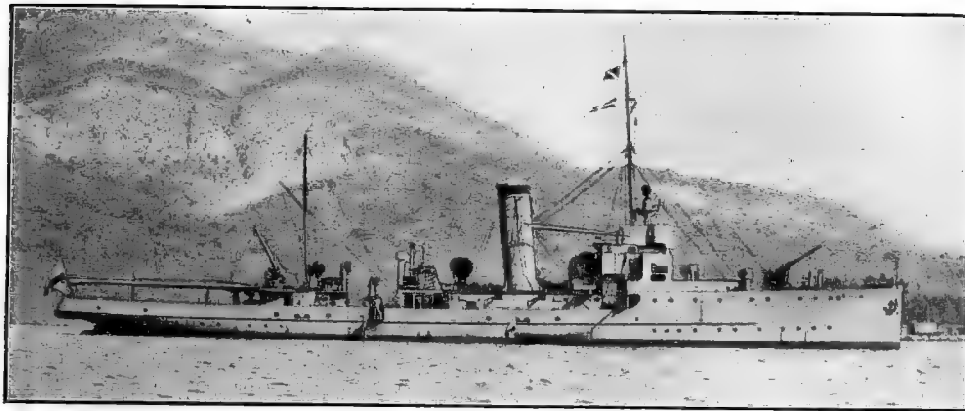


Hrabri.

1928 Photo, Abrahams.

Hrabri, Nebojsa (Armstrong, 1927). Displacement: $\frac{975}{1164}$ tons. Speed: $\frac{15.5}{11.0}$ kts. Armament: 2—4 inch A.A., 6—21 inch torpedo tubes. Generally similar to British L50 type. Radius 5000 miles at 9 kts.

Smeli (Dec. 1st, 1928), **Ostvetnik** (Feb. 14th, 1929). Laid down at Nantes, 1927, by At. & Ch. de la Loire. Displacement, $\frac{820}{1000}$ tons. 227 × 18 × 14 feet. H.P. $\frac{1340}{1000}$ = $\frac{14.5}{10}$ kts. Armament: 1—4 inch Skoda, 1—1 pdr. A.A., 1 M.G.; 4 bow and 2 stern, 19.7 inch tubes. Complement, 43. Resemble French *Diane* class in main features.



SOKOL.

1924 Photo, by courtesy of the Navy Department.

6 boats: **GALEB, LABUD, JASTREB, KOBATZ, ORAO, SOKOL** (1917-18). Displacement: 520 tons. Guns: 2—3·9 AA., 4—3 pdrs. (Only *Galeb* and *Sokol* carry full armament at present.) Complement 71.

Minesweepers.

4 boats: **D1, D2, D3, D4** (ex-Austrian t.b.s., *T.B. 21, 30, 38, 19*, 1886-89). Displacement: 78 tons. H.P. 900—1200. 128 feet long. Complement, 16.

Miscellaneous Auxiliaries (ex-Austrian.)

HVAR.

1928 Photo.

HVAR (ex-*Vintali*, ex-*Solum*) Sir. Jas. Laing & Sons Ltd., Sunderland, 1896 (Rebuilt 1927). Submarine Depot Ship. 2700 tons. Speed: 12 kts.

SILNICA (ex-*Najade*, 1891). Training Ship for Boys. 554 tons. Speed: 11 kts. Guns: 2—3 pdr.

VILLA (ex-yacht *Dalmata*, 1896). 268 tons. 12 kts. **LADA** (ex-*Quarnaro*, 1883). Displacement: 137 tons. 8 kts. **JAKI** (1916). 330 tons.

MOGNI (ex-*Gigant*, 1889), **SILNI** (ex-Tender 200), **SNAZNI** (ex-Tender 105), **USTRAJNI** (ex-Tender 162), **MARLIVI** (ex-*Vermach*). Displacement: 100—260 tons.

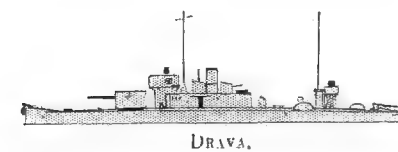
Note.—The construction of an Aircraft Tender is reported to have been authorised, 1929.

RECOGNITION SILHOUETTES.

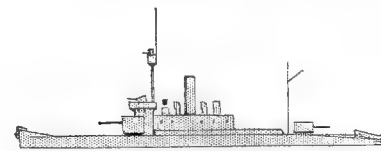
Scale: 1 inch = 160 feet.



VARDAR.



DRAVA.



SAVA.



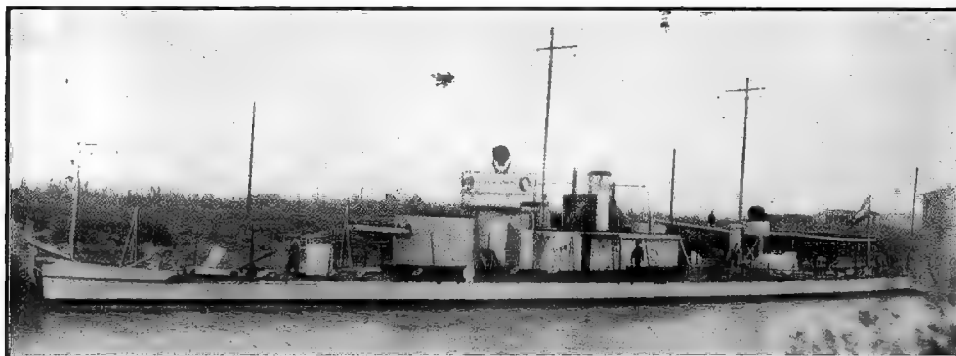
MORAVA.

Danube Flotilla.—River Monitors.

1921 Illustration, R. P. Schellema, Esq.

VARDAR (ex-Austrian *Bosna*, 1915). 550 tons. Dimensions: $190\frac{1}{2} \times 34\frac{1}{2} \times 4\frac{1}{2}$ feet. Guns: 2—4·7 inch, 2—11 pdrs., 7 M.G. Armour: $1\frac{1}{2}$ " belt and bulkheads, 1" deck, 2" C.T., 2" turrets and cupolas. H.P. 1600 = 12 kts. Oil: 75 tons. Complement, 100. Sister to *Bucovina*, now in Rumanian Navy.

River Monitors—continued.

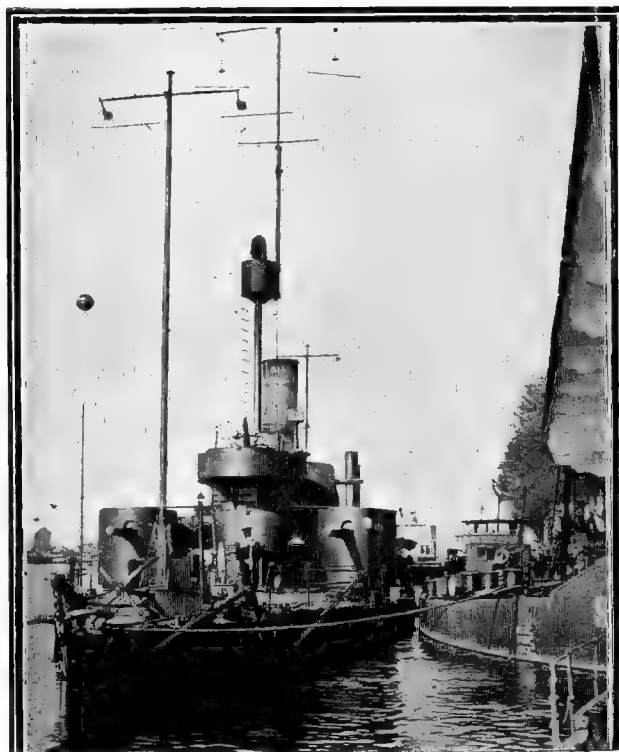


DRAVA.

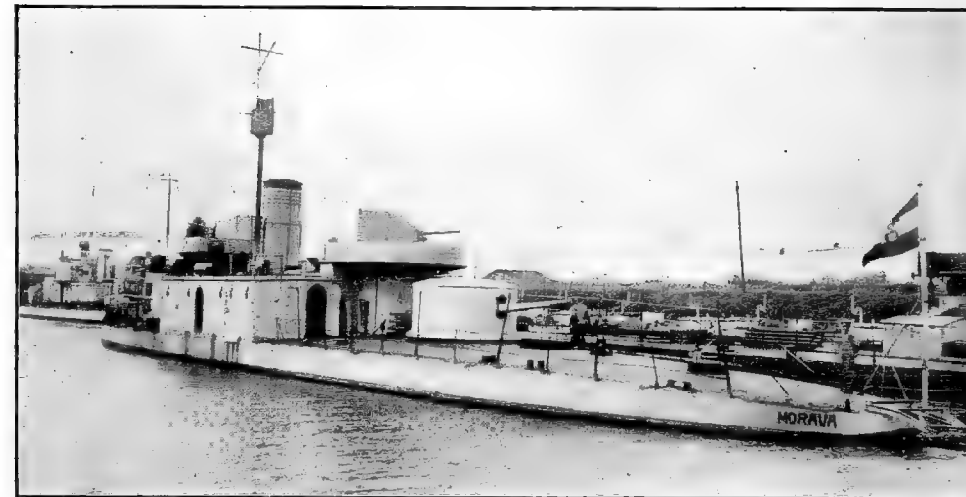
1924 Photo, by courtesy of the Navy Dept.

DRAVA (ex-Austrian *Enns*, 1913). 550 tons. Dimensions: $203\frac{1}{4} \times 34\frac{1}{2} \times 4\frac{1}{4}$ feet. Guns: 2—4.7 inch + 3—4.7 inch howitzers, 3—11 pdr., 7 M.G. Armour: $1\frac{1}{2}$ " Belt and Bulkheads, 1" Deck, 2" C.T. and Turrets. Designed H.P. 1500 = 13 kts. Boilers: Yarrow. Fuel: Oil only, 70 tons. Complement, 86. Built under Austro-Hungarian 1912 Naval Programme; ceded to Jugo-Slavia 1920. Sister ship *Basarabia* now in Rumanian Navy.

SAVA (ex-Austrian *Bođrog*, Neupest, March, 1904). 433 tons. Dimensions: $183\frac{3}{4} \times 31\frac{1}{4} \times 4$ feet. Designed H.P. 1400 = 13 kts. Boilers: Yarrow. Armament: 2—4.7 inch (45 cal.) + 1—4.7 inch howitzer, 2—3 pdr., 1 or 3 machine. Armour: $1\frac{1}{2}$ " Belt and Bulkheads, 1" Deck, 3"— $1\frac{1}{2}$ " Turrets and Conning tower. Complement, 79. Coal: 62 tons.



River Monitors—continued.



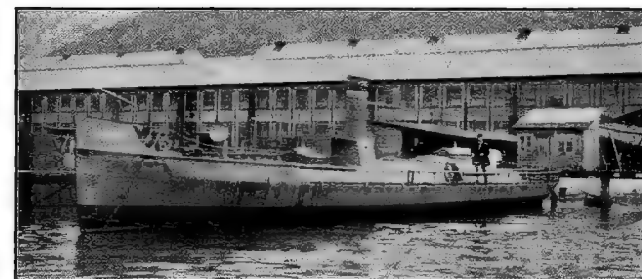
MORAVA.

1924 Photo, by courtesy of the Navy Dept.

Note overhanging rails at stern, for launching and hauling in boats.

MORAVA (ex-Austrian *Körös*, Budapest, 1892). 440 tons. Dimensions: $177\frac{1}{2} \times 29\frac{1}{2} \times 4$ feet. Designed H.P. 1200 = 10 kts. Boilers: Yarrow. Guns: 2—4.7 inch (35 cal.), 2—9 pdr., 2 M.G. Armour: 2" Belt, $\frac{3}{4}$ " Deck, 3" Turret, 2" C.T. Complement, 79-80. Coal: 80 tons.

Auxiliary Craft. (Official Classification.)



SRBIJA.

1924 Photo, by courtesy of the Navy Department.

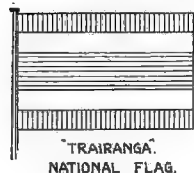
(**SRBIJA**. (Purchased 1916.) 50 tons. Speed: 12 kts. Is unarmed. National colours painted on funnel.

ROYAL SIAMESE NAVY.

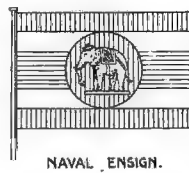
SIAM

Flags

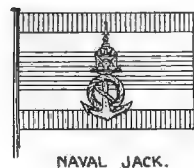
(Also v. third column).



"TRAIRANGA"
NATIONAL FLAG.



NAVAL ENSIGN.



NAVAL JACK.



RED. WHITE. BLUE.

RECOGNITION SILHOUETTES.

Scale: 1 inch = 160 feet.



BANCHU.



BALI
SUGRIB.



MURATHA*
M. RAJAKUMARN*.

* No top to foremast.



S. MONTHON.



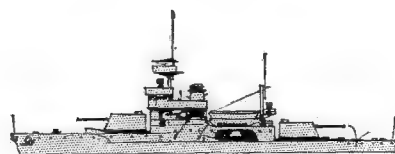
VIDES KICHKAR.



Torpedo boats,
Nos. 1-4.



MAHA CHAKRI.



RATANAKOSINDR.



CHOW PHRAYA.



Phra Ruang.



Sua Gamron Sindhu.
Sua Tayan Chol.

Flags (continued).

ADMIRAL OF THE FLEET'S FLAG.—A blue flag with a white elephant, and in the upper canton next the staff two yellow anchors crossed surmounted by the Siamese crown.

ADMIRAL'S FLAG.—A blue flag with a white elephant in the centre.

VICE ADMIRAL'S FLAG.—The same as the Admiral's flag but with a white "Chakra" in the upper canton next the staff.

REAR ADMIRAL'S FLAG.—The same as the Admiral's flag but with two white "Chakras" near the staff.

Personnel: 5000. Reserve: 20,000.

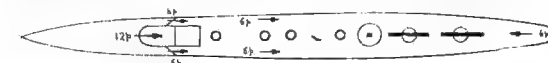
3 Destroyers.

PHRA RUANG



Phra Ruang (ex- British *Radiant*, launched by Thornycrofts, Nov., 1917. Purchased by Siam, July, 1920). 1035 tons. Dimensions: 274 (o.a.), 265 (p.p.) \times 27 $\frac{1}{2}$ \times 11 feet (max. draught) and 8 $\frac{1}{2}$ feet (mean). Guns: 3—4 inch, 1—2 pdr. pom-pom, 1 M.G. Tubes: 4—21 inch, in two twin deck mountings. Machinery: Brown-Curtis (all geared) turbines. Designed S.H.P. 29,000 = 35 kts. (39.67 trials). 3 Yarrow boilers. Oil fuel: about 285 tons max. Complement 100.

Notes.—Built for British Navy, under Emergency War Programme. Begun December, 1915, completed February, 1917. For the purchase of this boat, over two million ticals was raised by voluntary subscription in Siam.



PHRA RUANG.

1921 Photo, by courtesy of J. Bailey, Esq.



SUA-TAYAN-CHOL.

1919 Photo, J. Bailey, Esq.

Sua-Gamron-Sindhu (1912), 385 tons, and *Sua-Tayan-Chol* (1908), 375 tons. Both built by Kawasaki Co., Kobe, Japan. Dimensions: 227 (p.p.) \times 21 $\frac{1}{2}$ \times 6 feet. H.P. 6000=27 kts. Coal: 100 tons=1000 miles at 10 kts. Armament: 1—12 pdr., 5—6 pdr., 2 M.G.; 2—18 inch tubes. Complement: 75.

Notes.—Same type as the Japanese "Arare" class Destroyers.

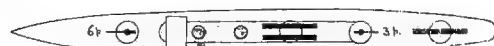
SIAM—T.B.D., T.B., Gunboats.

DESTROYERS AND TORPEDO BOATS.

GUNBOATS.

A new Gunboat is building by Vickers-Armstrongs Ltd., 1929.

4 Torpedo Boats.



No. 3.

1919 Photo, J. Bailey, Esq.

4 Kawasaki boats:—No. 1, 2 and 3 (1908), and No. 4 (1913), 120 tons. 131'6" × 16'2" × 3'6" feet. H.P. 1200=22 kts. Armament: 1—6 pdr., 1—3 pdr., 2—18 inch tubes. Complement: 29.

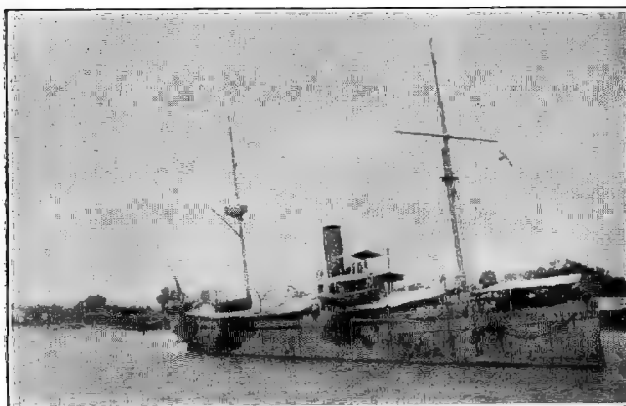
There is also a small "Motor Torpedo Boat" built at Bangkok about 1913-14. Has 1—14 inch tube and "Djinn" paraffin motor. Believed that this boat has been presented to the "Sea Scouts." The "Sea Scouts" also have two 40-foot Motor Launches, each armed with one 3 or 1 pdr. gun and fitted with "Cester" motors.



1926 Photo, by courtesy of Messrs. Armstrong.

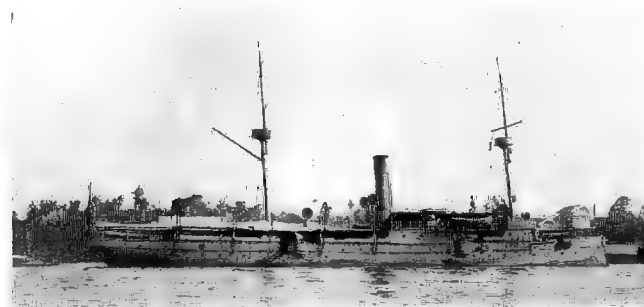
RATANAKOSINDI (Armstrong, April 21, 1925). 1000 tons. 160 (p.p.), 175 (o.a.) × 37 × 10 1/2 feet. Guns: 2—6 inch, 4—3 inch AA. Protection: Side 2 1/2" (amidships), 1 1/4" ends, nickel steel. Barbette rings, 2 1/2" nickel steel. C.T. 4 1/2" cast steel armour. Upper deck, 3/4" to 1 1/2" high tensile steel. 2 screws. Vertical triple expansion engines. H.P. 850 = 12 kts. 2 oil-burning water-tube boilers. Oil: 96 tons. Complement, 52.

Note.—Laid down 29th Sept., 1924, and completed August, 1925.



MONGKUT RAJAKUMARN (ex-Filipinas, Hongkong and Whampoa Dock Co., 1887; purchased 1891). 700 tons. 175 × 23 1/2 × 11 feet. Guns: 2—4.7 inch, 2—6 pdr., 3—3 pdr. Speed 11 kts. 2 screws. Complement: 100.

Note.—Originally built for Philippines Government, but having failed to reach designed speed on trials, delivery was refused. Sold by her builders to Siam. Usually known as *Mongkut*.



BALI.

1921 Photo, J. Bailey, Esq.

BALI (1901), **SUGRIB** (1901). 580 tons. 162 × 23 × 10 feet. Guns: 1—4.7 inch, 5—6 pdr., 4—1 pdr. Designed H.P. 500 = 11.4 kts. Complement, 83.

Appearance Note.—Tops on both masts; 2 yards above top on foremast.



1921 Photo, J. Bailey, Esq.

MURATHA (1898). 530 tons. 145 × 23 × 10 feet. Guns: 1—4.7 inch, 4—6 pdr., 3—1 pdr. Designed H.P. 500 = 11.4 kts. Appearance Note.—Only one top and one yard to foremast. Is smaller than *Mongkut*, looks lighter and has a noticeably thinner funnel, but at any distance impossible to distinguish *Muratha* from *Mongkut*.

Despatch Vessels.

Sriya Monthon (v. col. 3) is officially rated as a Despatch Vessel.

Photo wanted.

SATHIT* RAJAKARN (1907). 144 tons. Dimensions: $86 \times 16 \times 6$ feet. No guns. H.P. 112=7 kts. Complement, 25.

* Usually known by first name only.

Photo wanted.

KECHON (1907). 110 tons. Dimensions: $75 \times 13 \times 7$ feet. No guns. H.P. 120=9 kts. Complement, 16. No other details known.

PI-SUA-NAM. Displacement 165 tons. Dimensions: $100 \times 20 \times 8\frac{1}{2}$ (mean draught) feet. H.P. 210=9½ kts. Complement, 25.

TEWA SURARAM (1898). 115 tons. Guns: 1—6 pdr. 2 machine. H.P. 145=10 kts. Complement, 25.

Training Ship.



CHOW PHRAYA.

1921 Photo, by courtesy of Messrs. Thornycroft.

CHOW PHRAYA (ex-British Twin Screw Minesweeper *Harant*, built by Eltringhams, S. Shields, Nov., 1918, purchased 1923 and reconstructed by Messrs. Thornycroft). Displacement, 840 tons. Dimensions: $220 \times 28\frac{1}{2} \times 7\frac{1}{2}$ feet. Machinery: Vertical triple expansion. Boilers: Yarrow, converted to burn oil. I.H.P. 2200 = 16 kts. Oil: 160 tons. Complement, 65.

MISCELLANEOUS.

Transports.



1921 Photo, J. Bailey, Esq.

VIDES* KICHKAR (ex-Buk, ex-Lycidas, Ritson & Co., Maryport, 1902). 850 tons. $176 \times 27\frac{1}{2} \times 10\frac{1}{2}$ feet. H.P. 780=9 to 10 kts.

* Usually known by first name only.

PRA-YOM. Displacement 190 tons. Dimensions: $110 \times 13 \times 8$ (mean draught) feet. H.P. 225=10 kts. Complement, 30.

C. M. B.



C.M.B.

1925 Photo, by courtesy of Messrs. Thornycroft.

One 55-ft. type, (1922) by Messrs. Thornycroft. 11 tons. B.H.P. 750=37 kts. (40 kts. extreme). Petrol carried: 300 gallons normal, 500 maz. 4 Lewis guns, 2 torpedoes, 2 D.C. Complement, 5.

Tank Vessel.*

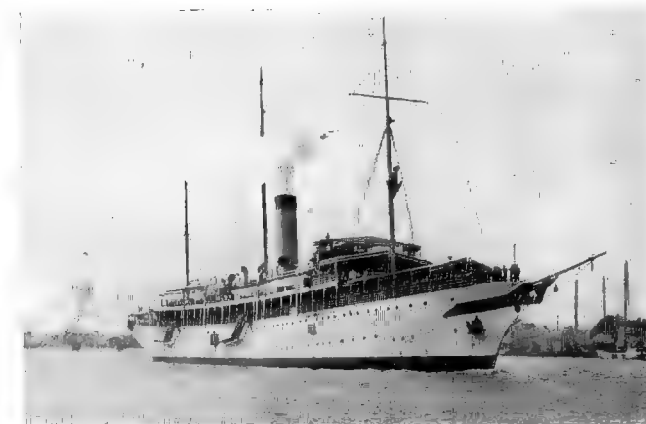


1921 Photo, J. Bailey, Esq.

BANCHU (ex-S.S. *Beagle*, Blackwood and Gordon, Glasgow, 1892). 250 tons. $110\frac{1}{2} \times 20\frac{1}{2} \times 6\frac{3}{4}$ feet. H.P. 120=8 kts.

* Officially listed as a "water boat," and is therefore assumed to be a Tank Vessel.

Royal Yacht.



1919 Photo, J. Bailey, Esq.

MAHA CHAKRI (Kawasaki Co., Kobe, Japan, 1918). About 2,400 tons gross. Complement, 199. Length, 298 feet (w.l.). 335 feet (o.a.). Beam, 40 feet. Draught, feet. Guns: Not known. Machinery (see Notes): 2 sets triple exp. Boilers: 4 (type unknown) coal and oil burning. I.H.P. about 2000=15 kts. Oil fuel: 200 tons=2000 miles endurance. 2 screws.

Notes.—The hull of the old Royal Yacht *Maha Chakri* was sold to the Kawasaki Co. in 1917, but the engines and other fittings were removed, overhauled and renovated for installation in the new *Maha Chakri* described above.

Coastguard Vessel.



1921 Photo, J. Bailey, Esq.

SRIYA* MONTHON (Thornycroft, 1908). Displacement 225 tons. Dimensions: 137 (p.p.) $\times 18 \times 6\frac{1}{2}$ (mean draught) feet. Guns: 1—6 pdr., 4 or 6 smaller. I.H.P. 700=14.5 knots speed. Coal: 66 tons. No. of Screws: 2. Boilers: 1 (type unknown). Complement, 46.

* Usually known by first name only.

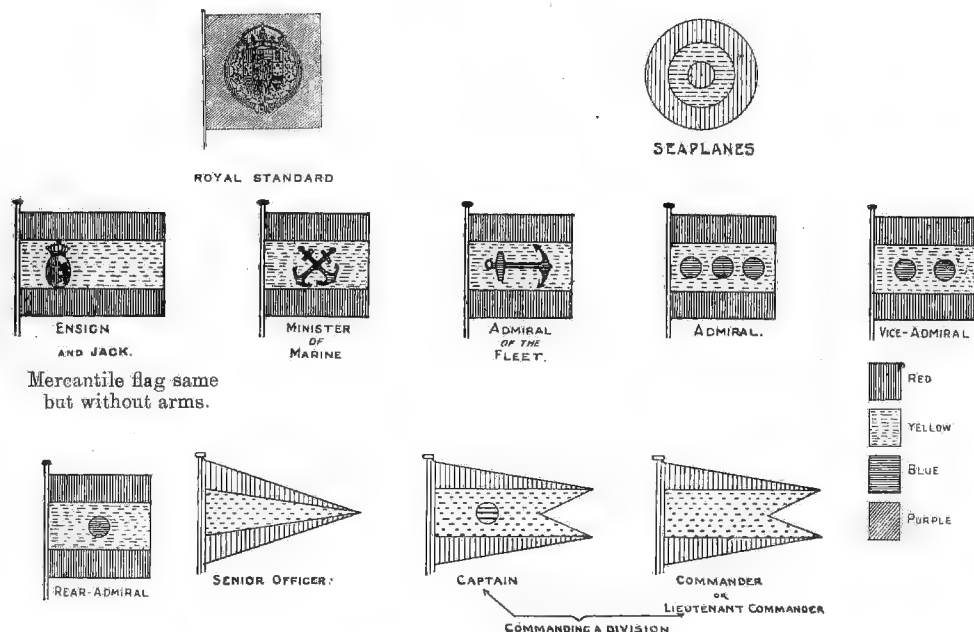
Also 3 ex-N.D.L. steam lighters, re-named *Chen Thale*, *Han Thale*, *Leu Thale*, built by Hongkong and Whampoa Dock Co. About $160 \times 27 \times$ feet, 440 tons gross. Nom. H.P. 60=8 kts. speed. Seized during the war and now used for various purposes, including occasional surveying duties.

There are various small craft used for River Duties of which no precise details are available.

ROYAL SPANISH NAVY.

Revised 1929 by courtesy of the Ministry of Marine.

I—Flags.



Mercantile flag same but without arms.

II—Administration.

Minister of Marine—Rear-Admiral Garcia de los Reyes.
Naval Attaché, (London)—Capitan de Corbeta Don Juan Pastor.

III—Naval Programme and Budget.

A new Programme of Naval Construction was authorised by the Law of July 4th, 1926, to include the following vessels, all of which are to be completed in six years' time:—
3 Cruisers, of about 10,000 tons. 3 Fishery Protection Gunboats, of 250 tons.
3 Flotilla Leaders, of Churrucua type. 2 Oilers (of 6,000 tons capacity).
12 Submarines, of "C" type.

IV—Fleet Organisation.

No exact details available: is reported to vary according to the season of the year. The latest statement available is as follows:—

(a) "In third Condition" (i.e. fully manned):—Training Squadron, *Alfonso XIII*, *Jaime I*, 6 cruisers and 3 destroyers of *Alsedo* class.

(b) *Juan Sebastian de Elcano* on Foreign Cruises, for Training Duties.

(c) For service on African Coast and in territorial waters, &c.:—

1 cruiser, 1 gunboat, 6 patrol vessels, 1 tug, and sundry small craft.

V—Personnel (1929).

Officers: 1729 (including Departmental Corps). Reserve: 374. 14,000 seamen; 2813 marines.



Other branches, without the curl, have distinguishing colours as follows:—

Engineers	...	green.	Astronomical	...	green brown.
Constructors	...	blue.	Pharmaciens	...	yellow.
Doctors	...	red.	Chaplains	...	violet.
Paymasters	...	white.			

VI—Training Establishments.

For Training Squadron and Division, &c., v. § IV (a) (b) (c).

Shore Establishments are:—For Executive Officers, Gunnery Officers, Naval School (*Escuela Naval Militar*), San Fernando. For Engineering Branch and Cadets, Ferrol. The old corvette, *Nautilus*, serves as a depot ship. For Accountant Officers, Cartagena.

In future, naval constructors and gunnery officers will be selected from executive branch by means of special courses. In order that officers may extend their studies in these and other directions, a Naval War College has been established in Madrid.

VII. Naval Ordnance.

Notation.	Nominal Calibre.		Model.	Length in calibres	Weight of Gun.	Weight of A.P. shell.	Initial velocity	Max. penetration A.P. capped direct impact at K.C. at		Danger Space against average ship. at			Rounds per minute.
	c/m.	inches.			tons.	lbs.	ft. secs.	5000 yards.	3000 yards.	10,000 yards.	5000 yards.	3000 yards.	
HEAVY	30.5	12	V'09	50	66	850	3010	inches 17	inches 20	...	...	...	2
	28	11	H.	35	32½	837	2034	5½	8	...	...	...	...
MEDIUM	15	6	*V.	50	7¾	100	3100	...	8¾	...	...	...	10
	15	5.9	R.	45	4½	88	2625	...	3	25	200	430	5—6
	14	5.5	H.	35	...	86	2001	...	...	...	...	...	...
	14	5.5	C.	35	...	86	2034	...	...	...	...	...	...
LIGHT	12	4.7	V.	45	...	48.5	2788	...	...	...	...	...	...
	10.5	4.1	K.	35	...	35.2	...	...	...	...	...	...	...
	10.2	4	V.	50	2.1	31	3030	...	...	...	...	...	15

V=Vickers. H=Hontoria. G=Guillen. R=Rueda. C=Canet. K=Krupp.

* Arsenal de Carraca.

VIII. Colour of Ships.

Light grey.

IX. Mercantile Marine.

(From "Lloyd's Register," 1929 figures.) Total gross tonnage, 1,161,591.

ONE FUNNEL.



ANTELO.
(Mining Vessel).



MACMAHON.



DORADO.
GAVIOTA.



ARÇILA class
(11 ships).



BONIFAZ class (4 ships).



ALMIRANTE LOBO.



C. DE CASTILLO class (3 ships).



CONTRAMAESTRE CASADO.



ALFONSO XIII.
JAIME I.



DEDALO

TWO FUNNELS.



KANGURO.
(S/M. Salvage and Docking Vessel.)



EXTREMADURA.



RIO DE LA PLATA.



PR. ALFONSO class (3).

TORPEDO CRAFT.

Scale: 1 inch = 160 feet.



No. 1—22 (t.h.)
(Some have no tubes)



Bustamante class (3)
(Mine Layers).



PROSERPINA.



BARCAIZTEGUI class leaders (4).



ALSEDO class (3).

THREE FUNNELS.



CARLOS V.



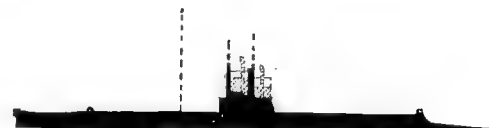
REINA VICTORIA EUGENIA.

SUBMARINES.

Scale: 1 inch = 80 feet.



MONTURIOL (A 1—3) class (3).



ISAAC PERAL.
(Has a 3 inch gun just before C.T.)



B 1—6 class.



MENDEZ NUÑEZ, BLAS DE LEZO.

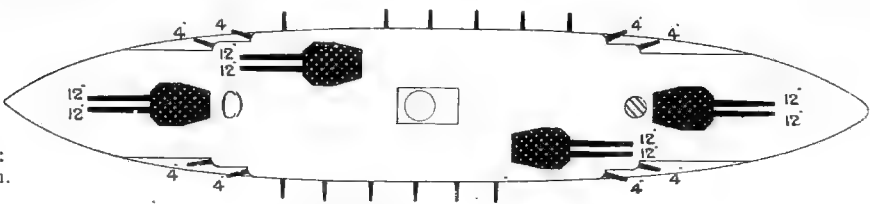
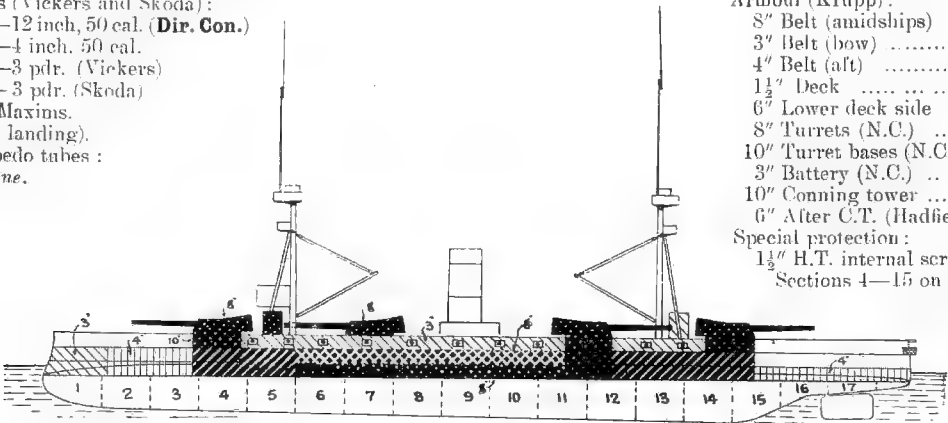
ALFONSO TRECE (May, 1913), & **JAIME PRIMERO** (Sept., 1914).

Normal displacement, 15,452 tons (*max.* 15,700 tons). Complement, 854.

Length (*waterline*), 435 feet. Beam, 78½ feet. *Max.* draught, 25½ feet. Length (*over all*), 459½ feet.

Guns (Vickers and Skoda):
8—12 inch, 50 cal. (**Dir. Con.**)
20—4 inch, 50 cal.
2—3 pdr. (Vickers)
2—3 pdr. (Skoda)
2 Maxims.
(2 landing).
Torpedo tubes:
none.

Armour (Krupp):
8" Belt (amidships)
3" Belt (bow)
4" Belt (aft)
1½" Deck
6" Lower deck side
8" Turrets (N.C.)
10" Turret bases (N.C.) ...
3" Battery (N.C.)
10" Conning tower
6" After C.T. (Hadfield)
Special protection:
1½" H.T. internal screens over
Sections 4—15 on plans.



Ahead:
6—12 in.
4—4 in.

Astern:
6—12 in.
4—4 in.

Broadside: 8—12 in., 10—4 in.

Machinery: Parsons turbine. 4 screws. Boilers: 12 Yarrow. Designed H.P. 15,500=19.5 kts. Coal: *normal* 900 tons; *maximum* 1900 tons+20 tons oil fuel=nominal radius of 5000 miles at 10 kts., and 3100 miles at 16½ kts.

Gunnery Notes.—Vickers type 12 inch gun directors in lower top on each mast. 12 inch manoeuvred by hydraulic power; all-round loading at any angle of elevation. Magazine capacity is 80 rounds per 12 inch gun, but there is ample storage for more than this. Arcs of fire: end 12 inch, *about* 270°; echelon 12 inch, 180° on own beam (*nominal*) and about 80° far beam. Heights of guns over normal waterline: 12 inch, 24½ feet; 4 inch, 13½ feet. Total weight about 2550 tons. (These notes are not from any official source.)

Armour Notes.—Main belt is 6 feet 7 inches deep, 4 feet 7 inches of this being below waterline and 2 feet above. On plans 8 inch belt amidships should extend to bases of end barbettes. Hull without armour=5600 tons.

Machinery Notes.—Engines=1320 tons.

Torpedo Notes.—Bullivant net defence. No torpedo tubes installed.

Name	Builder	Machinery	Laid down	Completed	Trials (Full Power)	Boilers	Best recent speed
Alfonso XIII Jaime I	Ferrol Yard	S. E. C. N.	Feb. '10	1915	= 20.36	Yarrow	
			Feb. '12	1921	23.357 = 20.028		

General Notes.—Built under Navy Law of 7th January, 1908. Construction of *Jaime I* was greatly impeded by delivery of materials from England being stopped during the war up to 1919. A third ship of this type, *España*, wrecked on Riff coast of Morocco, August, 1923, and became a total loss.



JAIME I (two white bands round funnel).

1925 Photo, Capitan M. Mille.



ALFONSO XIII (only one white band round funnel).

1926 Photo, Capitan M. Mille.

1st Class Cruisers (*Cruceiros de 1ª Clas*).

(BALEARES CLASS—2 SHIPS.)

BALEARES, CANARIAS.

Displacement: 10,000 tons *standard* (12,230 tons *full load*). Complement,Length, 636 feet. Beam, 64 feet. Draught, 17½ feet (*mean*).*Building.*

Guns:

8—8 inch.

6—4.7 inch.

4—4.7 inch A.A.

8—2 pdr. pom-pom A.A.

Torpedo tubes (21 inch):

12 (*above water*, tripled).

Armour:

Probably on similar lines
to British *Kent* type.

Machinery: Parsons geared turbines. Boilers: Yarrow. Designed S.H.P. 90,000 = 33 kts.

Notes.—Both ships laid down at Ferrol, August 15th, 1928. A third cruiser of this type is to be constructed during 1930–32.

1st Class Cruisers—continued.

1920 Photo, Capitan M. Mille.

(Harbour Training Ship.)

CARLOS QUINTO (1895). 9993 tons. Comp., 583. Dimensions: 404½ (*o.a.*) × 67 × 27½ feet *max.* draught; *mean* draught, 25 feet. Armament: 2—11 inch (35 cal. Hontoria), 8—5.5 inch (35 cal. Hontoria), 4—4.1 inch (Krupp), 2—12 pdr. (Vickers), 8—6 pdr. (Nordenfeli), 8—1 pdr. (Hotchkiss). Torpedo tubes (14 inch): 2 *above water*. Armour: 2½" Deck, 10" Barbettes with 4" Hoods and 8" Hoists, 2" over Battery, 12" C.T. Boilers: 8 Yarrow (fitted 1925). Designed H.P. 15,000, made 19 kts. on trial. Coal: *max.* 2040 tons. Begun at Cadiz, 1892. At present serves as Depot Ship for seamen under training at Ferrol and no longer goes to sea. May be discarded in near future.

Note.—Old cruiser *Cataluña* has been removed from effective list, as she was found to be not worth refitting.

SPAIN—Cruisers.

CRUISERS.

PRINCIPE ALFONSO (Jan, 3rd, 1925), **ALMIRANTE CERVERA** (Oct. 16th, 1925), and **MIGUEL DE CERVANTES** (May 19th, 1928).

Normal Displacement, 7,850 tons. Full load, abt. 9,000 tons.

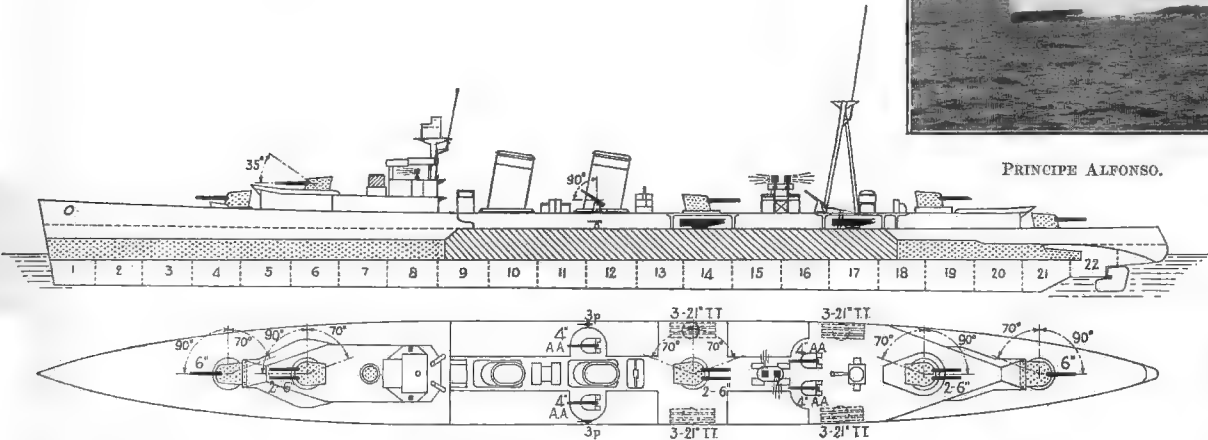
Length, 575 feet, (p.p.) 579½ feet, (o.a.) Beam, 54 feet.

Draught, mean 16½ feet, deep load feet.

Complement, 545.

- Guns :
8—6 inch, 50 cal. (Dir. Con.)
4—4 inch, 45 cal. A.A.
2—3 pdrs. A.A.
1 Machine.
Tubes :
12—21" in four triple
U.D. rev. mounts.

- Armour :
3" Side (amidships.)
2" Side (forward.)
1½" Side (aft.)
1" Deck.
2" (H.T. ?) over rudder. ?.....
6" Conning tower. ?.....



Ahead : 3—6 in. Broadside : 8—6 in., 6—21 in. T.T. Astern : 3—6 in.

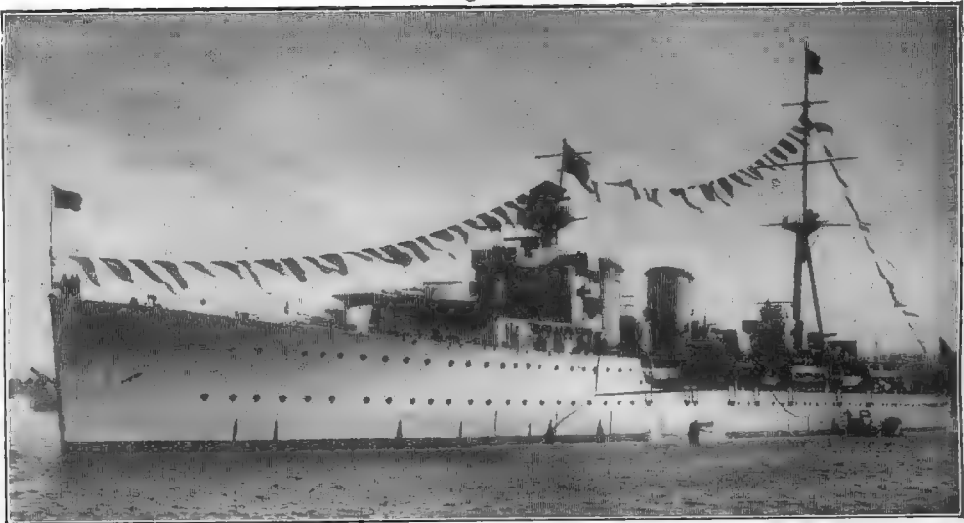
Machinery : Parsons Geared Turbines. 4 screws. Boilers : 8 Yarrow (large tube).
Designed S.H.P. 80,000 = 33 kts. Fuel capacity : 500 tons oil, normal ; 1650 tons oil, maximum.
Endurance : 5000 at 15 kts., 1200 at full power.

Name	Builder	Machinery	Laid down	To be Completed	Trials	Boilers
Pr. Alfonso Alm. Cervera M. de Cervantes	Ferrol D.Y.	S. E. C. N.	{ Aug. '22 25 Nov. '22 Apr. '26	{ Dec. '25 May '27 1931	S3000 = 31.7.	{ Yarrow



PRINCIPE ALFONSO.

1927 Photo, Capitan Mateo Mille.



PRINCIPE ALFONSO.

1929 Photo, Renard, Kiel.

Notes.—Laid down by S.E.C.N. at Ferrol D.Y., under Navy Law of 17th Feb., 1915. Originally projected that only one Cruiser should be begun, but redistribution of funds has permitted the construction of two more of this type. Cost estimated at about \$122 pesetas a ton.
Designed under direction of late Sir Philip Watts, K.C.B., Director of Sir W. G. Armstrong, Whitworth & Co., Ltd., for Spanish Government. Are practically enlargements of British "C" class, with second, third and fourth gun positions paired.

Cruiser (*Cruçero Ligero de 2ª Clas*).

REINA VICTORIA EUGENIA (21st April, 1920).

Displacement 5590 metric tons. Complement 404.

Length (p.p.) 440 feet, (o.a.) 462 feet. Beam, 49½ feet. Mean draught, 15½ feet.

Guns (Vickers):

9—6 inch, 50 cal.

4—3 pdr. AA.

1—12 pdr. (Field)

4 Machine

Torpedo tubes: (21 inch).

4 above water
(twin mountings).

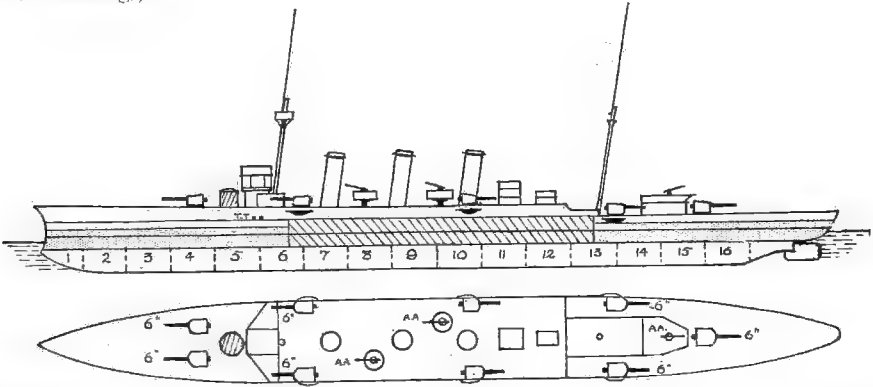
Armour (Nickel and H.T.):

3" Side

2½-1½" Ends

3" Deck

6" Conning tower



Ahead:
4—6 in.

Broadside: 5—6 in., 1—21 in. tube.

Astern:
3—6 in.

Machinery: Parsons turbines. 2 screws. Boilers: 12 Yarrow (coal and oil burning), in 3 rooms. Designed H.P. 25,500=25·5 knots. Coal: normal 660 tons (inclusive of oil fuel).

Gunnery Notes.—6 inch are Vickers models, built at La Carraca. Those on Forecastle have 180° arc of training, i.e., 30° inboard and 150° on own beam.

Torpedo Notes.—Above water tubes are behind lidded ports on main deck above section numbered 5.

Name	Builder	Machinery	Ordered.	Laid down	Completed	Trials	Boilers	Best recent speed
R.V. Eugenia	Ferrol D.Y.	S. E. C. N.	Aug. '14	Mar. '15	15 Jan., '23	8 hours: 26049 = 25·77 4 hours: 28,387 = 26·9	Yarrow.	25·7

General Notes.—Built under Navy Law of 30th July, 1914.



REINA VICTORIA EUGENIA.

1925 Photo, Capitan M. Mille.



1923 Official Photo.

Cruisers.



MENDEZ NUÑEZ.

1924 Photo, Capitan M. Mille.

BLAS DE LEZO (27th July, 1922) and **MENDEZ NUNEZ** (3rd March, 1923).

Normal Displacement : 4725 metric tons. Complement : 343.

Length, (p.p.) 410 feet, (o.a.) 462 feet. Beam, 46 feet. Draught, 14½ feet mean.

Guns :

6—6 inch, 50 cal. **Dir. Con.**

4—3 pdr. AA.

4 machine.

(1—12 pdr. landing.)

Torpedo Tubes (21 inch) :

12 above water (triple mountings)

Armour :

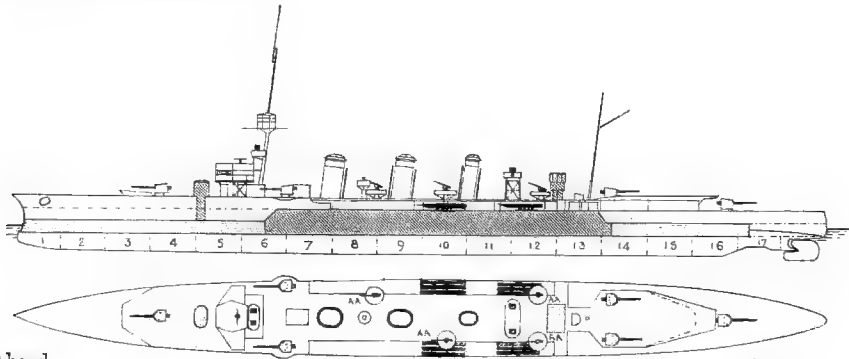
3" Side amidships

2½ 14" Side (ends)

1" Deck

6" C.T.

" Director tower



Ahead :

3—6 in.

Broadside: 4—6 inch, 6—21-inch tubes.

Astern :

3—6 in.

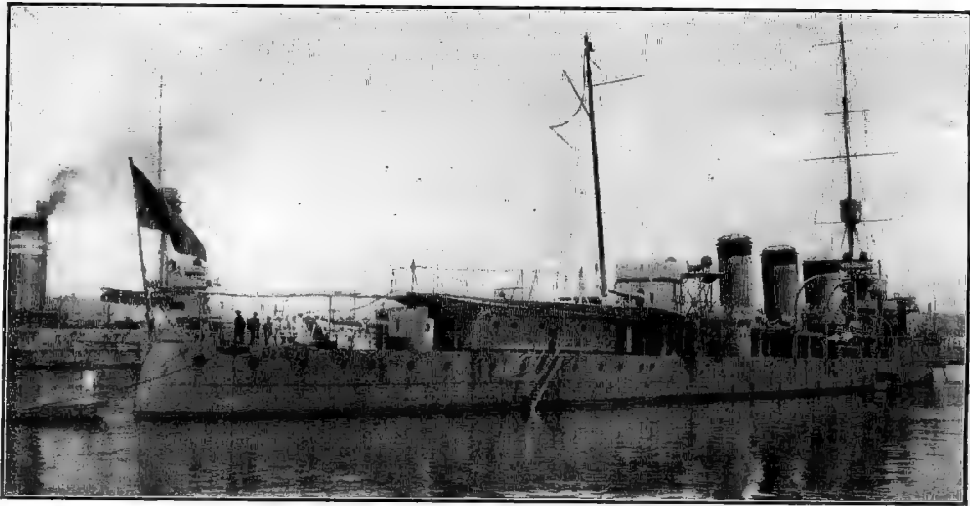
Machinery: Parsons (geared) turbines. 4 screws. Boilers: 12 Yarrow (6 oil burning, 6 mixed firing). Designed H.P. 45,000 = 29 kts. Coal: normal, 250 tons; maximum, 787 tons + 492 tons oil. Radius: 5000 miles at 13 kts.

Name	Builder	Machinery	Laid down	Completed	Trials	Boilers
B. de Lezo M. Nunez	Ferrol D.Y. Ferrol D.Y.	S. E. C. N.	9 April '17	Mar.' 25 1924	45,093 = 29.25 43,776 = 29.28	Yarrow
			28 Sept.'17			



BLAS DE LEZO.

1926 Photo, Capitan M. Mille.



MENDEZ NUÑEZ.

1925 Photo, Capitan M. Mille.

3rd Class Cruisers (*Cruceros de 3a Clas*).

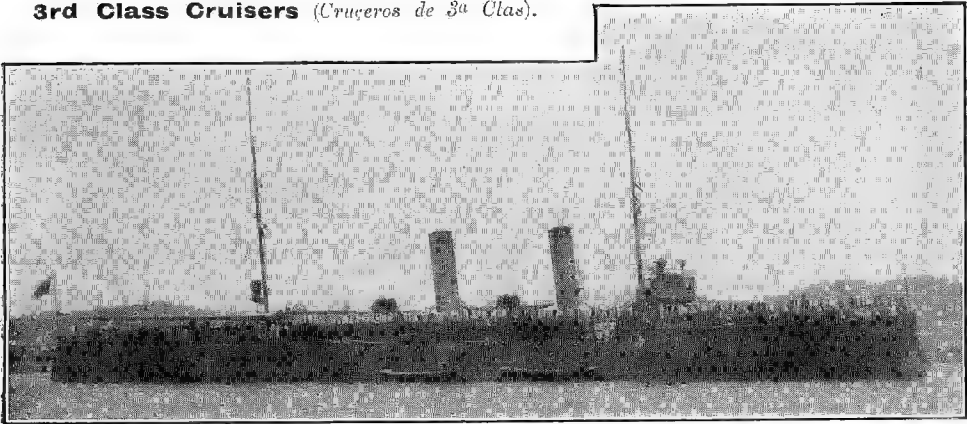


Photo (1918), *Capitan M. Mille*.

EXTREMADURA (Cadiz, 1900). 2100 tons. Complement, 266. Dimensions: $288\frac{3}{4} \times 36\frac{1}{2} \times 16\frac{1}{2}$ feet. Guns: 8—4 inch (50 cal. Vickers), 4—6 pdr., 4—1 pdr., no tubes. Armour: $1\frac{1}{4}$ " Deck. Machinery: 2 screws. Boilers: Thornycroft. H.P. 7000=19 kts. Coal: *max.* 425 tons.

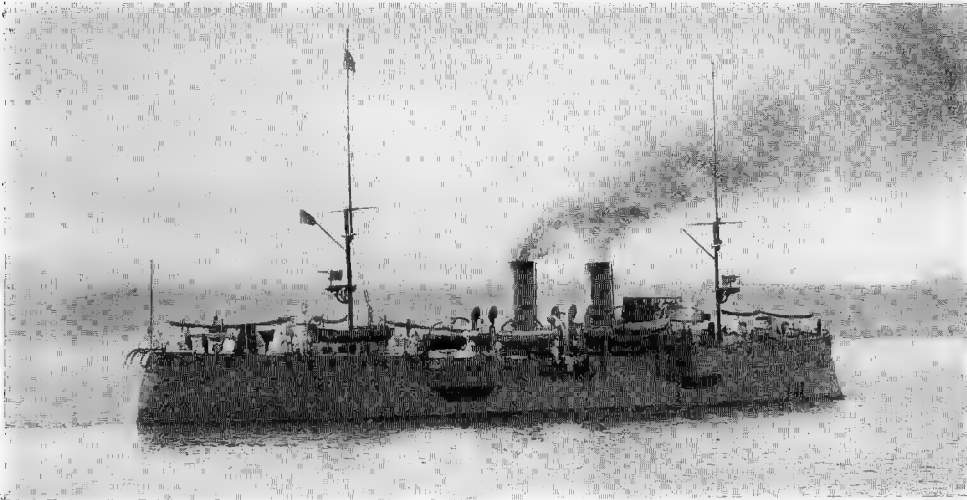


Photo (1919), *Capitan M. Mille*.

RIO DE LA PLATA (Havre, 1898). 1920 tons. Comp., 213. Dimensions: $250\frac{3}{4} \times 35\frac{1}{2} \times 15\frac{1}{2}$ feet *maximum draught; mean draught, 14 $\frac{1}{2}$ feet.* Guns: 2—5.5 inch, 35 cal. (Canet), 2—4.1 inch (Krupp), 4—6 pdr., 4—1 pdr. No tubes. Armour: $1\frac{1}{4}$ " Deck. Machinery: Reciprocating. 2 screws. Boilers: Normand-Sigaudy. H.P. 7000=19 kts. Coal: *max.* 376 tons

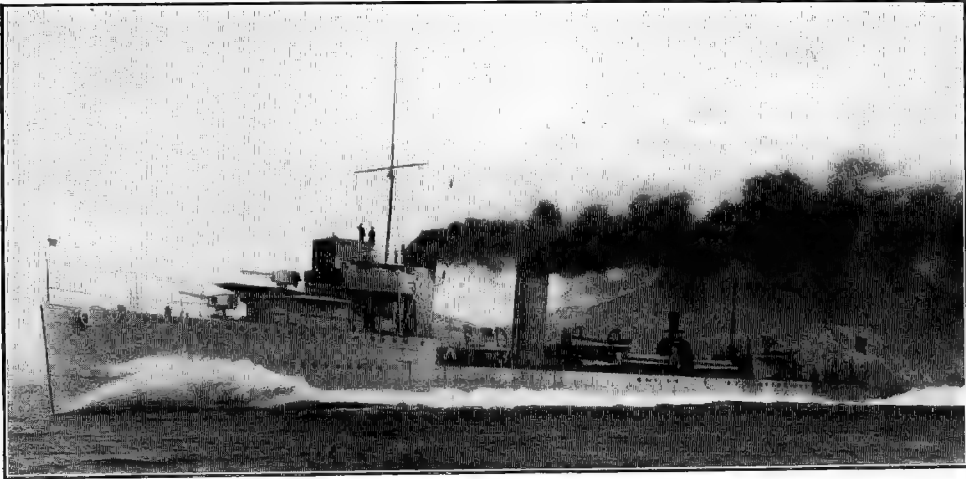
Note.—This vessel is no longer regarded as effective for fighting purposes, being used as a Harbour Depot Ship for the Naval Air Service, Barcelona.

11 + 2 (building) + 8 (authorised) Flotilla Leaders and Destroyers (*Destroyers*).

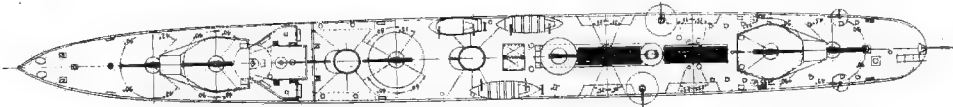
No.	Type	Date	Dis- place- ment	H.P.	Max. speed	Fuel	Com- ple- ment	T. tubes	Max. draught
6	Flotilla Leaders (S)	'23—?	tons		kts.	tons			feet
3	<i>Alcedo</i> (S)	'20-'25	1650	42,000	36	540 oil	...	6	10 $\frac{1}{2}$
3	<i>Bustamante</i> (S)	'12-'17	532	33,000 (<i>t</i>)	34	265 oil	...	4	10 $\frac{1}{2}$
1	<i>Proserpina</i> (C)	1897	467	6250 (<i>t</i>)	28	80	70	4	5 $\frac{3}{4}$
				7300	30	96	74	2	9 $\frac{3}{4}$

C = Clydebank. S = Built in Spain by S.E.C.N.

4 + 2 (building) Flotilla Leaders.



1926 Photo, by courtesy of the Ministry of Marine.



Sanchez Barcaiztegui (1926). **Amirante Juan Ferrandiz** (May 21st, 1928), **José Luis Díez** (August 25th, 1928), **Lepanto** (Nov. 7th, 1928). **Alcala Galiano**, **Churrua**, all at Cartagena, by S.E.C.N. Displacement: 1650 tons *normal*, 1800 tons *full load*. Dimensions: $320 \times 31\frac{1}{2} \times 10\frac{1}{2}$ feet. Designed H.P. 42,000 = 36 kts. Two sets Parsons turbines. Guns: 5—4.7 inch, 1—14 pdr. A.A. Torpedo tubes: 6—21 inch, tripled. 2 D.C. carried. Oil: 540 tons. Radius = 4,500 miles at 14 kts.

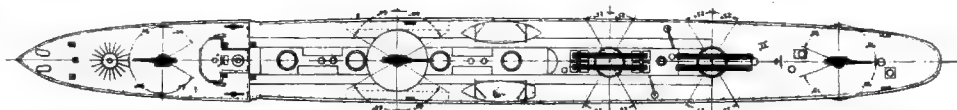
Note.—Built under 1915 Programme. Design generally similar to British Leaders of Scott class. Former *Churrua* and *Alcala Galiano*, of this type, were sold to Argentine Navy, 1927. New vessels bearing these names were laid down in 19-9.

3 Alsedo Class (+ 8 authorised).



ALSEDO.

1928 Photo, Abrahams & Sons, Devonport.



3 *Alsedo* class: *Alsedo* (26th Oct., 1922), *Velasco* (1923), *Juan Lazaga* (March, 1924). All built at Cartagena. Displacement: 1145 tons (*normal*) 1325 tons (*full load*). Dimensions: 275 × 27 × 10½ feet. (*max.*) Parsons geared turbines and 4 Yarrow boilers. Designed H.P. 33,000 = 34 kts. (36 kts. reached on trials.) Fuel 265 tons oil only. Radius: 2500 miles at 15 kts. Guns: 3—4 inch (40 cal.), 2—2 pdr. anti-aircraft. Torpedo tubes: 4—21 inch in 2 twin deck mountings.

Notes.—Provided under Law of 1915. First of class laid down about June, 1920. Design resembles British *Nimrod* type. 8 more vessels of this type have been authorised, and will be laid down in 1929-30.



3 Bustamante Class.

Note.—T.T. probably twin mounts.



VILLAMIL.

1925 Photo, Capitan Mateo Mille.

3 *Bustamante* class: named *Bustamante* (1913), *Villamil* (1913), *Cadarso* (ex *Requesens*, 1914). All built at Cartagena D.Y., 527 to 548 tons. Dimensions: 221½ × 22 × 5½ feet. Armament: 5—6 pdr. Tubes: 4—18 inch in first two and 4—15 inch in *Cadarso* only. S.H.P. 6350=28 kts. Yarrow or Normand boilers. Parsons turbine. 3 screws. Coal: 80 tons=900 miles at 15 kts. Complement 70. Built under Navy Law of 7th January, 1908. Are all fitted for minelaying.

1 Audaz Class.



(Now employed on Fishery Protection duties.)

1920 Photo, Capitan M. Mille.

Proserpina (Clydebank, 1897; rebuilt 1916). 467 tons. 229 × 22½ × 9½ feet. I.H.P. 7200 = 30 kts. Guns: 2—14 pdr., 2—6 pdr., 2—1 pdr. Torpedo tubes: 2—15 inch. Coal: 96 tons = 1020 miles at 15 kts. Complement, 74.



22 1st Class Torpedo Boats

(*Torpederos de 1ª Clas*).

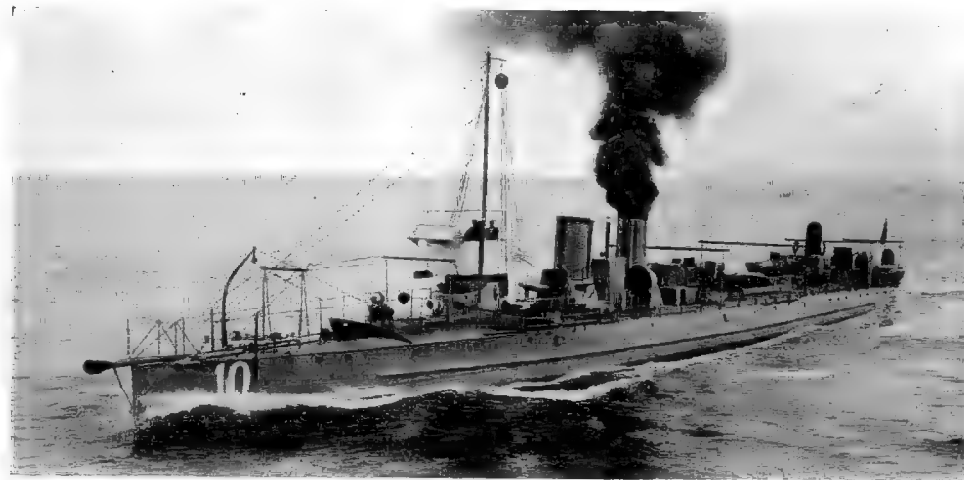


Photo (1919), Capitan M. Mille.

22 *Vickers-Normand*. 2 (1911), 1, 3, 5, 6 (1912), 4 (1912, rebuilt 1916), 7, 8, 13 (1914), 9, 11, 12, 14 (1915), 10, 15, 16 (1916), 17, 18, 19, 20 (1918), 21, 22 (1919). 177 tons. Dimensions: 164 × 16½ × 4½ feet (*max. draught*). Armament: 3—3 pdr., 3—18 in. tubes, twin amidships and single aft. H.P. 3750=26 kts. Parsons turbines and Normand boilers. Coal: 33 tons. 3 screws (Nos. 1-7). 2 screws (Nos. 8-22). Complement, 31. 24 boats sanctioned under Law of the 7th January, 1908, but Nos. 23 and 24 were abandoned 1919. No. 22 completed 1921. All are fitted for minelaying.

SUBMARINES.

S/M.—SPAIN

C. M. B.

1 boat. *Thornycroft* 40 feet type (1922). 1 V/12, 250 B.H.P. motor=30 kts. No armament. Used as a Vedette boat. Complement, 3.

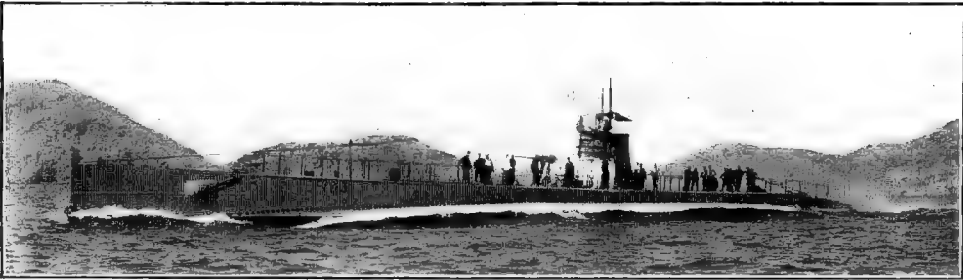
16 + 12 (authorised) Submarines (Submarinos.)

Note.—The details given on this and next page are only partly based on official information.

No.	Type	Date	Dis- place- ment	H.P.	Speed	Radius of Action.	T. tubes	Com- ple- ment	Max. draught
6	C 1-6 (H)	'23-'30	tons 915 1290		kts. 16 10		6		feet
6	B 1-6 class (H)	'16-'25	556 836	1400 850	16 10½	...	4	28	11½
3	A 1-3 class (FL)	'15-'17	260 382	600 450	13 8½	1600 miles at 8½ kts. 85 miles at 4 kts.	2	18	10½
1	Peral (H)	'15-'16	488 750	1000 480	15 10	2400 miles at 11 kts. 70 miles at 4½ kts.	4	24	11

(H)=Holland type. (FL)=Flat-Laurenti type.

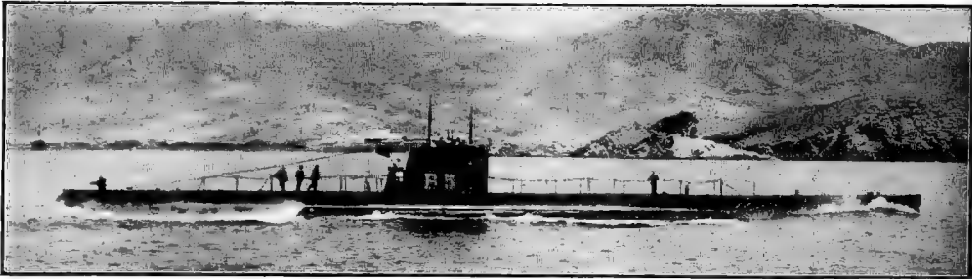
The 1915 Naval Programme provided for 28 submarines, out of which 16 boats will have been completed by 1930.



C 1.

1927 Photo, Capitan Mateo Mille.

6 Holland type, built at Cartagena : **C1** (1925), **C2** (1926), **C3** (1927), **C4** (1927), **C5** (1928), **C6** (1928), (C7—18 authorised for construction during 1929-32). Displacement : 915 tons *on surface*, 1290 tons *submerged*. Dimensions : about 247 × 20½ × 13½ feet. Machinery : 2 sets 8-cylinder Nelsco Diesel engines. Speed : 16 kts. (*surface*), 8½ kts. (*submerged*). Guns : 1—75 mm. A.A. Torpedo tubes : 6—21 inch (4 bow, 2 stern). Diving limit, 45 fathoms, reached by C1, on trials in 1928).



B5.

1922 Photo, Capitan M. Mille.

6 Holland type : **B1** (1921), **B2** (1922), **B3** (1922), **B4** (1922), **B5** (1923), **B6** (1923). Begun at Cartagena, July, 1916. Are an improved and enlarged *Isaac Peral* type. Displacements : 556 tons *on surface*, 836 tons *submerged*. Dimensions about 205 × 17'9 × 11½ feet. Machinery : *on surface*, 2 sets 8-cyl. Nelsco Diesel engines, totalling 1400 B.H.P.=16 kts.; *when submerged*, electric motors and batteries of 850 H.P.=10-10½ kts. Trial results for class averaged $\frac{16.8}{10.7}$ kts. Guns : 1—3 inch. Torpedo tubes : 4—18 inch. Provided for by Law of 17th February, 1915.

Note.—B6 was submerged for 72 hours without inconvenience during experiments.



Photo (1919), Capitan M. Mille.

MONTURIOL (A1). These boats now carry a tall mast for W/T. abeam of after periscope on port side of C.T.

3 *Laurenti-Fiat* type : **Narciso Monturiol (A1)**, **Cosme Garcia (A2)** and **A3**, (all built by Fiat San Giorgio Co., Spezia, 1915-17). Displacements : 260 tons *on surface*, 382 tons *submerged*. Dimensions : 149'6 × 13'8 × 10'2 feet. Machinery : *on surface*, 2 sets of 300 H.P., 6-cylinder, 2-cycle Fiat Diesel engines=600 H.P.; *when submerged*, 2 electric motors of 225 H.P.+batteries=450 H.P. Maximum speeds : 13 kts. *on surface* and 8½ kts. *submerged*. Radii of action : *on surface*, 650 miles at full speed and 1600 miles at 8½ kts.; *when submerged*, 18 miles at 8 kts. and 85 miles at 4 kts. Torpedo tubes : 2—18 inch in bows. Complement 18. Built under Law of 17th February, 1915.

Note : Each boat is internally sub-divided into 8 w.t.c. Maximum diving depth 130 feet (about 22 fathoms). Detachable lead keel, weighs 9½ tons. Fitted with telephone buoy, Fessenden submarine signalling and receiving apparatus, and Marconi W/T. For rescue and salvage work there are 6 lifting rings outside hull, and 3 escape hatches within hull, for crew. 2 Periscopes about 3½ inches diameter.

(Continued on next page.)



Submarines—continued.

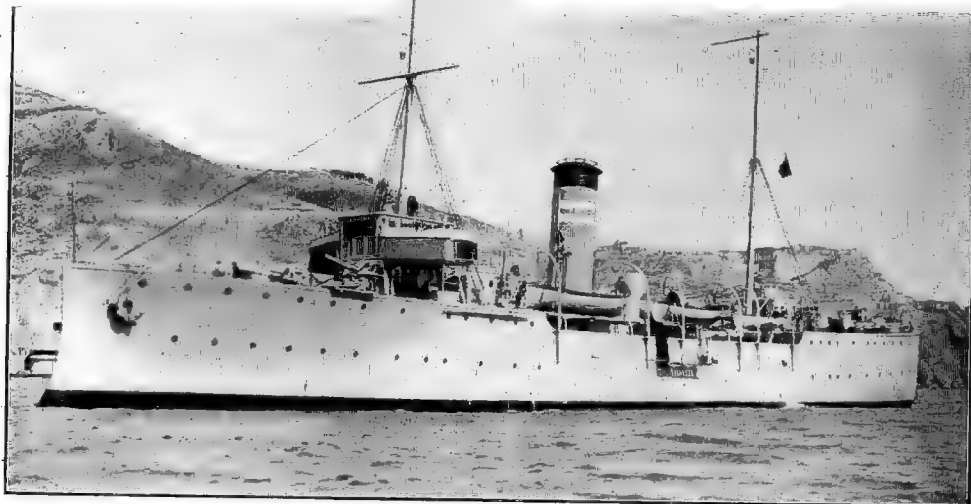
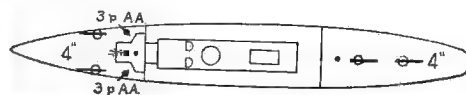
Photo (1919), Capitan M. Mille.

ISAAC PERAL: Has a tall folding mast for W/T. just before conning tower; two ventilators on top of C.T. may also be raised, when on surface. These details are not shown in above illustration.

1 Holland type: **Isaac Peral** (Fore River Co., U.S.A., July, '16). Displacement: 488 tons on surface, 750 tons submerged. Complement, 24. Dimensions: 197 x 19 x 11 feet. Machinery: on surface, 2 sets of 500 H.P. Nelseco Diesel engines=1000 H.P. for 15 kts. speed (made 15.36 on trials); submerged, electric motors + batteries of 480 H.P.=10 kts. speed. Radii of action: 2400 miles on surface, at cruising speed of about 11 kts.; 70 miles submerged, at 4.5 kts. Armament: 1—3 in. Q.F. (anti-aircraft and disappearing mounting), 4 torpedo tubes in bows. Built under Law of 17th February, 1915.

1st Class Gunboats

(Cañoneros de 1a Clas).



E. DATO.

1925 Photo, Capitan M. Mille.

ANTONIO CANOVAS DEL CASTILLO (21st Jan., 1922), **JOSÉ CANALEJAS** (1st Dec., 1922), **EDUARDO DATO** (1923). Built by S.E.C.N., at Cartagena. Displacement, 1335 tons. Complement, 132. Dimensions: 236.3 (p.p.) 253.6 (o.a.) x 33.9 x 11.2 feet. Guns: 4—4 inch, 2—3 pdr., A.A., 2 pom-poms (for landing). No T.T. or armour. Machinery: 2 sets, triple exp. Boilers: 2 Yarrow. Designed I.H.P. 1700. Speed, 18 kts. Fuel: 324 tons coal or oil=6500 miles at 10.5 kts. Provided for by Law of 17th February, 1915, and ordered January, 1920. *C. de Castillo* and *J. Canalejas* completed 1923, *E. Dato* completed 1924. Differentiated by number of funnel bands.

1st Class Gunboats—continued.



LAYA.

1925 Photo, W. A. Fuller, Esq.

BONIFAZ (1911), **LAURIA** (1912), **LAYA** (1910). 800 tons. **RECALDE** (1910). 811 tons. Complement, 126—129. Dimensions: 213.3 x 30 x 9.5 feet (max) draught. Guns: 4—14 pdr. 2 machine. Designed H.P. 1100=14 kts. Made 13.8 to 14.6 kts. on trial. Yarrow boilers. Coal: 148 tons. Radius, 3000 at 10 kts. Built under Navy Law of 7th Jan., 1908, at Cartagena.

Third Class Gunboat. (Cañonero de 3a clas.)



1916 Photo Capitan M. Mille.

MACMAHON (1887). 114 tons. 91.5 x 16 x 5 feet. Guns: 2—2.5 pdr., 1—1 pdr. I.H.P. 150=7 kts. Coal: 10.5 tons. Complement, 32.

MISCELLANEOUS.

11 Armed Trawlers.

(Purchased in England and France, 1922.)

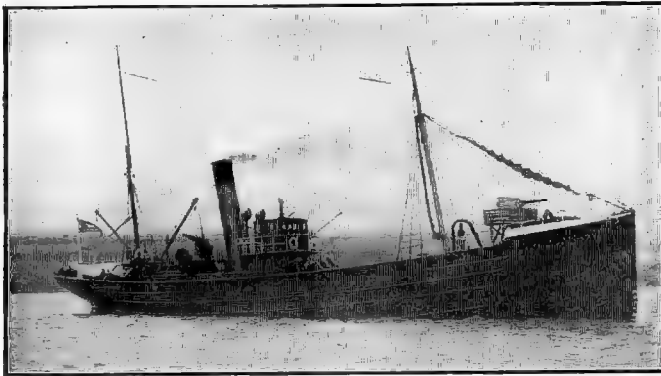
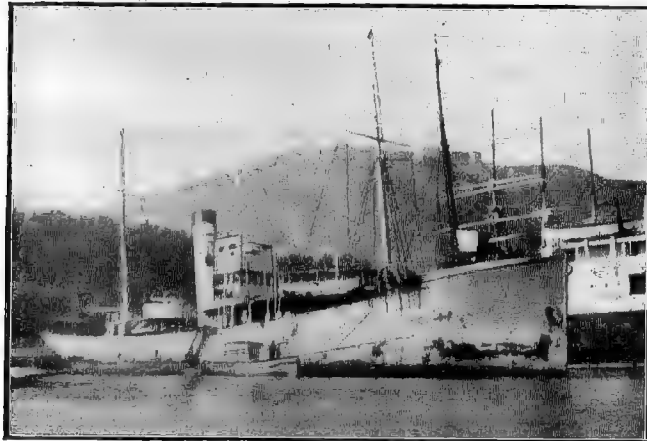


Photo added 1925 by courtesy of Messrs. Cochrane & Sons, Ltd.

- 2 "Mersey type" **ARCILA**, (ex-William Doak, Goole S.B. & Rep. Co., 1918), **XAUEN** (ex-Henry Cramwell, Lobnitz & Co., 1918). Displacement: 665 tons. (324 tons gross). Dimensions: 138½ (p.p.), 148 (o.a.) × 23½ × 13½ feet. I.H.P. 550=11 kts. Coal: 204 tons.
- 1 Special type: **UAD QUERT** (ex-Rother, ex-Anthony Aslett, Cochrane & Sons Ltd., Selby, 1917). Displacement about 690 tons (305 tons gross). Dimensions: 130 (p.p.) × 23½ × 13 feet. I.H.P. 550=10.5 kts. Coal: 140 tons.



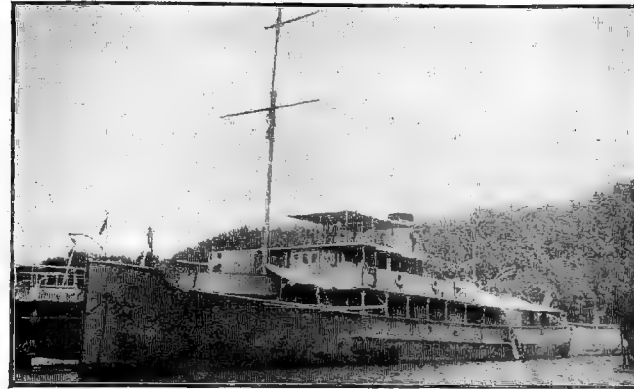
UAD Lucas type.

1925 Photo, W. A. Fuller, Esq.

- 5 "Castle type": **UAD LUCUS** (ex-Ness, ex-Alexander Palmer, Smith's Dock Co. Ltd., 1917), **UAD MARTIN** (ex-Erne, ex-John Chivers, Bow, McLachlan & Co., 1917), **UAD MULUYA** (ex-Wareney, ex-James Conner, W. Harkness & Co. Ltd., 1917).

Armed Trawlers—(continued).

UAD RAS (ex-Wear, ex-Thomas Bomkworth, ex-John Bomkworth, Cook, Welton & Gemmell, 1918), **UAD TARGA** (ex-Test, ex-Patrick Bowe, Cook, Welton & Gemmell, 1918). Displacement, 547 tons, (275 tons gross). Dimensions: 125 (p.p.), 134½ (o.a.) × 22½ × 12½ feet. I.H.P., 480 = 10.5 kts. Coal: 164 tons



ALCAZAR.

1925 Photo, W. A. Fuller, Esq.



LARACHE.

1922 Photo.

- 3 "French type" (builders not reported): **ALCAZAR** (ex-Rengagé), **LARACHE** (ex-Poilu), **TETUAN** (ex-Grognard). 370 tons gross. Dimensions: 124 × 22½ × 11 feet. I.H.P., 400 = 10 kt.
- Note.—All the above vessels built 1917-18, and understood to be armed with 1-3 inch gun, though some (including *Arcila* and *Xauen*) mount 2.

Surveying Vessel. (Comisión Hidrográfica.)

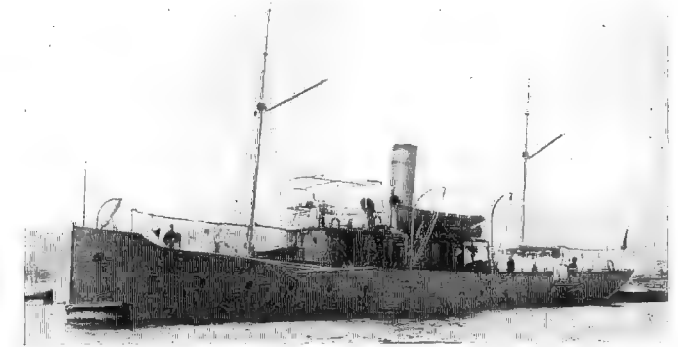
Note.—2 new surveying vessels are projected.

GIRALDA (Govan 1894, bought 1898) 2450 tons. 300 × 35 × 16½ feet. Guns: 2-6 pdr. (Nordenfellt). I.H.P. 2000 (n.d.), 3500 (f.d.) = 20 kts. Coal: 436 tons = 4671 miles at 20 kts. Complement, 147. Refitted 1921, and specially fitted out for oceanographic research.

Miscellaneous—SPAIN

Coastguard and Fisheries Vessels. (Guardapescas.)

To be built during 1929-32: 3 Fishery Protection Vessels of 250 tons displacement.

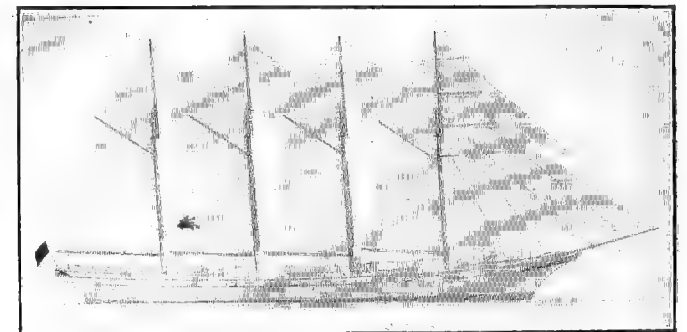


GAVIOTA.

1920 Photo, Capitan M. Mille.

GAVIOTA (1910-11). 158 tons. Guns: 1-5 pdr. Speed, 11 kts. Complement, 26.

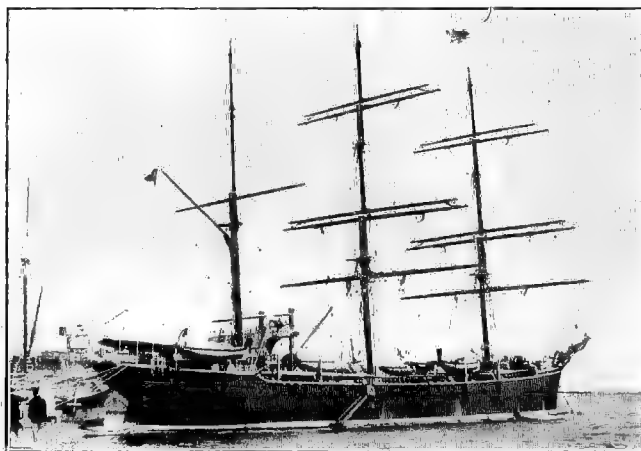
Training Ships.



1926 Official Sketch, by courtesy of Ministry of Marine.

JUAN SEBASTIAN DE ELCANO. (Echevarrieta Yard, Cadiz, 5th March, 1927), completed 1928. Four-masted Schooner. Displacement at ¾ load: 3420 tons. Dimensions: 269½ (p.p.) 308½ (o.a.) × 43 × 21½ feet (draught at ¾ load). 1 Sulzer Diesel motor of 800 H.P. = 9.5 kts. 1 screw. Oil: 230 tons. Endurance: 10,000 miles at 9.5 kts. Complement, 310 + 80 cadets.

Training Ships—continued.



GALATEA. Photo, Manuel I. Codoner, Esq., 1927.
GALATEA (ex-Barque *Clarastella*, 1896). Purchased in Italy, 1922. 2085 tons. 2 auxiliary Diesel motors of 450 h.p. each = 9 kts. T.S. for boys.

Sea-going Tugs. (*Remolcadores*.)

(Appearance as British "Saint" class.)

CICLOPE (ex-St. *Clement*, purchased 1922.) Built by Crichton & Co., 1918. Displacement: 800 tons. $136 \times 29 \times 16\frac{1}{2}$ feet. Guns: 4—3 inch. H.P. 1230 = $12\frac{1}{4}$ kts. Coal: 240 tons. Complement:

GALICIA (ex-R.5). Displacement: 350 tons. $100\frac{1}{2} \times 21 \times 11$ feet. H.P. 550 = 10 kts. Guns: 4—3 inch.

CARTAGENERO (ex-H.S. 78), **FERROLANO** (ex-H.S. 80), **GADITANO** (ex H.S. 82). Built by Crichton & Co., South Saltney, Chester, 1918. Displacement: 30 tons. $83\frac{1}{2} \times 21\frac{1}{2} \times 10\frac{1}{2}$ feet. Guns: 1—6 pdr. H.P., 420 = 10 kts.

Note.—Above 5 vessels mainly employed in Morocco Coast patrol and examination service.

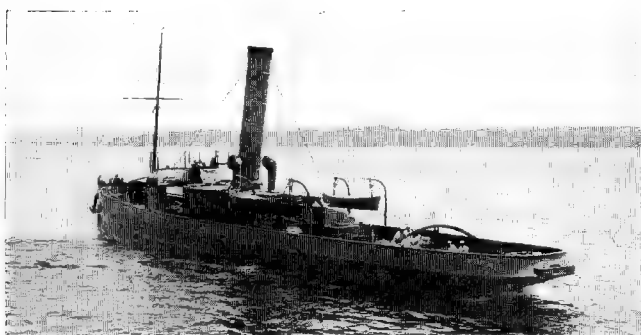


Photo (1919), Capitan M. Mille.

ANTELO (1903). Ocean-going Tug, Mine Layer, Mine Sweeper and Training Ship for Mining Service. 342 tons. $131\frac{1}{2} \times 21\frac{1}{2} \times 6\frac{1}{2}$ feet. I.H.P. 650 = 11 kts. Coal: 32 tons. Carries 40 mines.

GUNBOATS AND MOTOR LAUNCHES.

Submarine Salvage Vessel.

(*Buque para salvamento de submarinos*.)



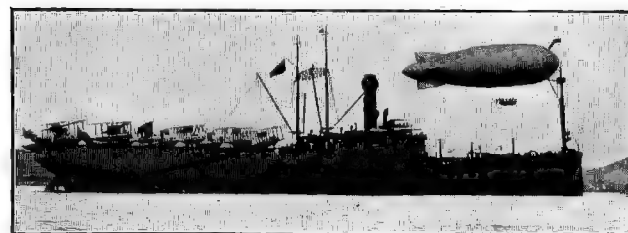
1921 Photo, Capitan M. Mille.

(Attached to S/M. Station, Cartagena.)

KANGURO (1917). Double hulled type, with interior docking space. Built by Werf Conrad, Haarlem, Netherlands. 2550 tons. Length, 275 feet; beam, 65 feet; draught (empty) 14 feet; (with submarine docked), 20 feet. Can dock submarine up to 151 feet long. Salvage power: Can raise 650 tons, from $27\frac{1}{2}$ fathoms. H.P. 1000 = 10 kts. (9.53 trials). Fuel: 150 tons = 2448 miles at economical speed. Guns: 4—42 mm.

Aircraft Carrier.

(*Estacion Transportable de Aeronautica Naval*.)



1925 Photo, Capitan M. Mille.

DEDALO (ex-*Neuenfels*), built by Swan Hunters, 1901; afterwards *Espana No. 6*. Transformed 1922. 10800 tons. Dimensions: $420 \times 55 \times 20\frac{1}{2}$ feet. Engines: Quadruple expansion. 3 S.E. boilers H.P., 3000 = $12\frac{1}{2}$ kts. Guns: 2—4.1 inch, 2—1 pdr. Complement, 324. Coal: 940 tons.

Forward is space for one small airship, 42 metres long (shown in photo attached to mooring mast), and there is a complete hydrogen plant. Aft is the seaplane accommodation, workshops, &c., nominal capacity = 25 planes, 2 dirigibles, and 2 balloons. Observe anti-flare device on funnel top in above photo.

Transport. (*Transporte*.)



Photo (1919), Capitan M. Mille.

ALMIRANTE LOBO (1909). 2545 tons. Guns: 2—5 pdr. Designed H.P. 4300 = 12 kts. Nominal radius, 4540 miles at 10 kts. Complement, 76.

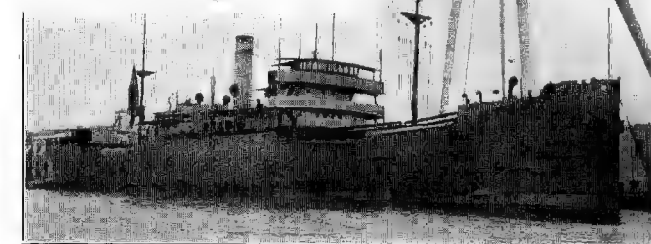
Fleet Oilers.

2 Oilers, each of 6000 tons capacity, are to be built during 1929-32.

Fleet Collier.

CONTRAMAESTRE CASADO.

1929 Photo, Capitan M. Mille.



CONTRAMAESTRE CASADO. (Armstrong Naval Yard, launched 26th October, 1920). 2042 tons net register, 3282 tons gross; 5000 tons d.w.c. Dimensions: 320 (p.p. and w.l.), 332 (o.a.) $\times 45\frac{1}{2} \times 23$ feet. Guns: 4—42 mm. Machinery: 1 set triple exp. Boilers: 3 Cyl. (Howden f.d.). 1 screw. I.H.P. 1950 = 10.5 kts. Own coal: about 310 tons. Complement, 107.

Motor Launches.



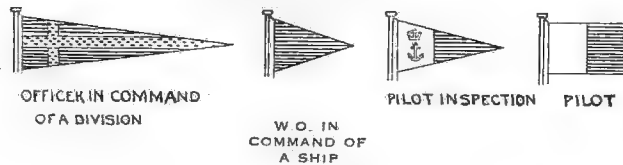
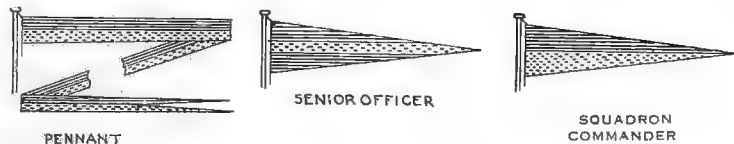
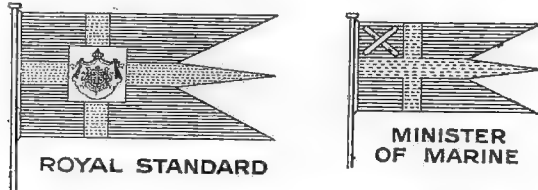
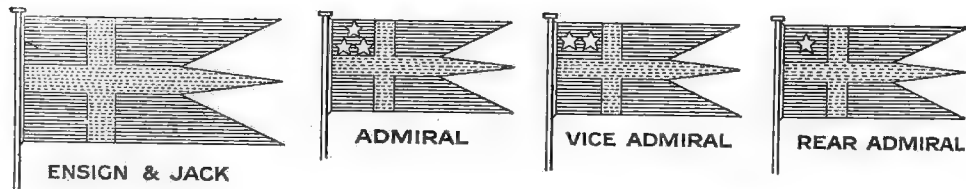
Official Photo, 1921.

H.1, H.2, H.3. Are Ex-British Motor Launches purchased 1921 and employed as tenders to Naval Aviation Centre. Built 1916-18. 40 tons. Dimensions: $80 \times 12\frac{1}{2} \times 6\frac{1}{2}$ feet. Guns: 1—5 pdr. B.H.P. 440 = 19 kts. 2 sets of petrol motors. Fuel: 7500 litres petrol. Complement, 11.
Note.—To replace above vessels, which are more or less worn out, it is proposed

ROYAL SWEDISH NAVY.

SWEDEN

Revised 1929 by courtesy of the Chief of the Naval Department, Ministry of Defence.



Note.—The blue is azure in every case but last 3 flags

Mercantile Marine.

From "Lloyd's Register," 1929 figures.

Total gross tonnage, 1,510,125 (Ships under 100 tons excluded).

New Construction Programme.

This is tabulated on last page of Swedish Navy section.

Administration.

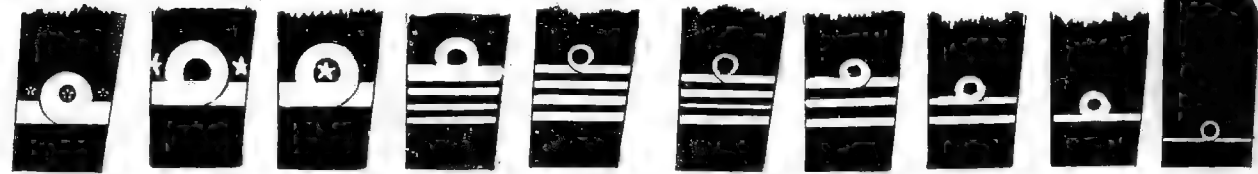
Minister of Defence: E. E. H. Malmberg.

Chief of the Naval Staff: Konteramiral O. E. Lybeck.

The Naval Staff is divided into Mobilisation, Operations, Communication, Organisation and Intelligence Divisions. Naval Attachés are attached to the last-named Division.

Naval Attaché (London): Kommendörkapten Baron L. M. Beck-Friis.

INSIGNIA OF RANK ON SLEEVES.



Amiral. Vice-Am. Konter-Am. Kommendör. Kommendörkapten. Kapten. Löjtnant. Under-Löjtnant. Fänrik
Ad-miral. Vice-Ad. Rear-Ad. Commodore. 1 graden. 2 graden. Commander & Lieut.-Com. Lieutenant. Sub-Lieut. Acting Sub-Lieut.

All civilian officers have stripes with triangular curl, and colour between stripes as follows:—Constructors and Engineers, violet blue; Doctors, red; Paymasters, white.

Personnel: Active List, about 5400 officers and men. Total for Reserves cannot be estimated, as it is dependent on conscription, but includes 340 officers.

Modern Swedish Guns (Bofors).

(All details are unofficial).

Notation	Designation		Length in calibres	Model	Weight of Gun	Weight of A.P. shot	Initial velocity	Max. penetration firing A.P. capped at K.C.			Danger Space against average warship, at			Nom. per minute
								8000 yds.	5000 yds.	3000 yds.	10,000 yards	5000 yards	3000 yards	
A ₆	c/m	inches	45	'11	tons	lbs.	ft.secs.	in.	in.	in.				1.2
A ₄	28	11	42	'94	41	760†	2576†	10‡	15	18				1
A	25.4	10*	42	'94	29	450	2362		8	11	125	340	675	2
C	21	8.3	44	'98	17	275†	2460†		7	9‡	100	425	600	2
E	15.2	6	50	'03	7‡	100	2789†				75	230	460	6
F	15.2	6	45	'98	6	100	2460			6	60	200	410	6
	12	4.7	50	'11	3‡	46‡	2822							8
	12	4.7	45	'94	2	46‡	2430			3‡				8

Guns marked † in the velocity column fire Bofors special nitro-compound.

* Also a Schneider Canet 10-inch Mark of which details are not available.

Torpedo.

Whiteheads. Submerged tubes (Armstrong pattern). Torpedoes, 21 in., 18 in. and 15 in. Since 1911 torpedoes have all been manufactured at Karlskrona.

Colour of Ships.

Light Grey all over.

Scale: 1 inch=160 feet.



THOR & ODEN
(N10RD Depot Ship, similar, but big guns removed.)



SVEA.
(Depot Ship.)



BLENDÅ.
(Depot Ship)



SKULD
(Depot Ship.)



PSILANDER.



J. BAGGE.*
* No strut to foremast: superstructure runs to foremast.



ÅRAN class (4 ships).



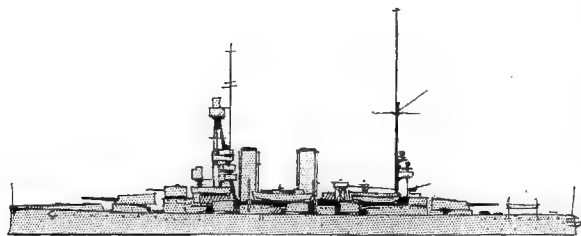
GÖTA.
Depôt Ship)



ÖRNEN



CLAS FLEMING
(Mine Layer).



D. VICTORIA, SVERIGE, GUSTAF V.

TORPEDO CRAFT. Scale: 1 inch=160 feet.



WRANGEL class (2).



WALE class (1), HUGIN class (2).
MAGNE.



T.B. N:r 5
class. (6).

VEDETTE BOATS.



Vesta type (14).



CASTOR (2)

SUBMARINES. Scale: 1 inch=80 feet.



FYLGIA.



OSCAR II.



Delfinen.



BÄVERN class (3).



HAJEN class (3).



N:r 3-4.

COAST DEFENCE BATTLESHIPS. (*Kustpansarfartyg*).

Battleships—SWEDEN

From *Sverige* class, down to and including *Oden*, officially rated as *Pansarskepp* (Ironclads).

New Construction.

In 1933 it is proposed to lay down a new coast defence ship of 7500 tons displacement; dimensions will be 420×61×20½ feet; Guns: 4—11 inch, 6—6 inch, 4—3 inch AA. H.P. 28,500=24 kts.

(*SVERIGE* CLASS—3 Ships.)

SVERIGE (May, 1915), **DROTTNING VICTORIA** (Sept., 1917) and **GUSTAF V** (Jan., 1918).

Displacement: 7,600 tons (*Sverige*), 7,900 tons (*other two*). Complement, 450.

Length (*w.l.*) { *Sverige*, 392·8 feet. } Beam, 61 feet. Max. draught, 22 feet.
 { *D. V. & G. V.*, 396·6 feet. }

Guns (Bofors):

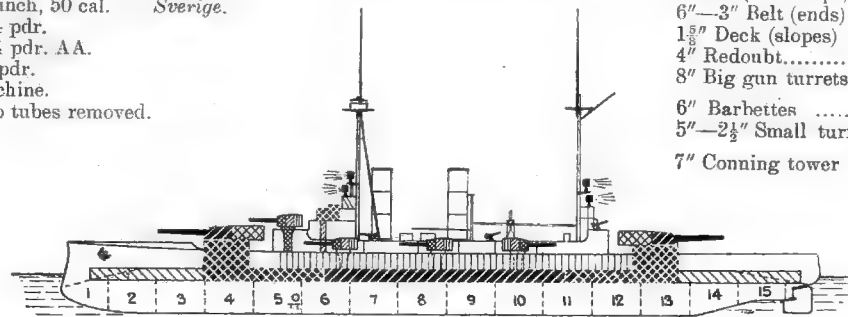
- 4—11 inch 45 cal. **Dir. Con.** in
- 8—6 inch, 50 cal. *Sverige*.
- 4—14 pdr.
- 2—14 pdr. AA.
- 2—6 pdr.
- 2 machine.

Torpedo tubes removed.

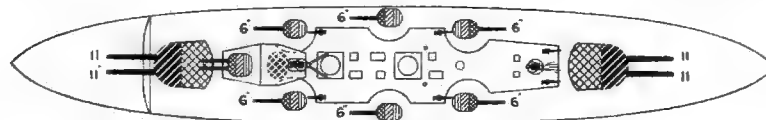
(Now rigged as illustration.)

Armour: (Carnegie and Bofors).

- 8" Belt (amidships).....
- 6"—3" Belt (ends).....
- 1½" Deck (slopes).....
- 4" Redoubt.....
- 8" Big gun turrets.....
- 6" Barbettes.....
- 5"—2½" Small turrets.....
- 7" Conning tower.....



Ahead:
2—11 in.
4 to 6—
6 in.



Astern:
2—11 in.
2 to 4—
6 in.

Broadside: 4—11 inch, 5—6 inch.

Machinery: In *Sverige*, Curtis turbines by Kockum Co., 4 screws; in *Gustaf V* and *Drottning Victoria*, Westinghouse geared turbines by the Motala Company, 2 screws. Boilers: 12 Yarrow. Designed S.H.P. 20,000 in *Sverige*, 22,000 in *D. Victoria* and *Gustaf V*=22·5 kts. Trials: 23 to 23·6 kts. Coal: Normal 350 tons; maximum 700 tons+100 tons oil.

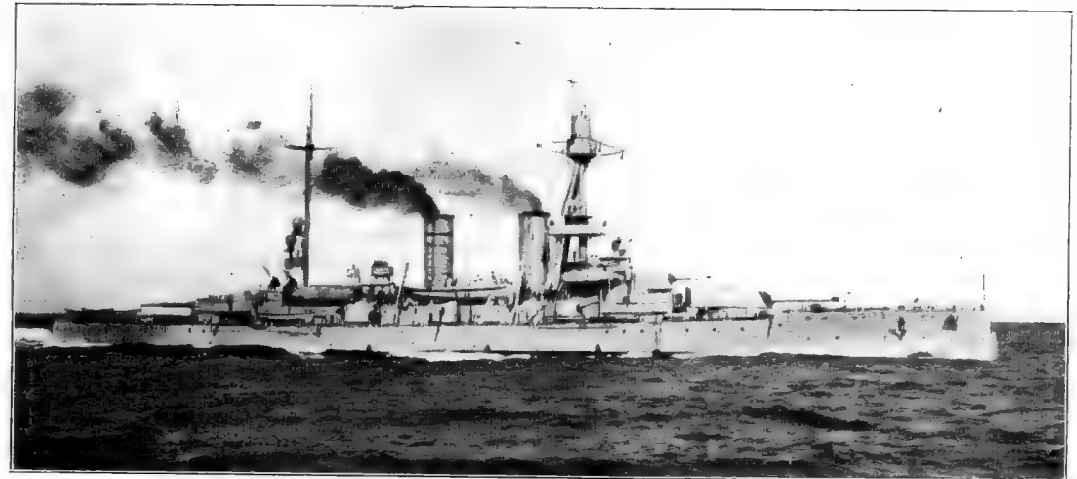
Engineering Notes.—In *D. Victoria* and *Gustaf V*, Westinghouse turbines consist of 2 sets on each shaft, each containing two turbines of the "divided-flow" type, driving propellers through double-pinion reduction gears (total weight of turbines and reduction gears about 160 tons):

Shaft H.P.	24,800	11,045	2,228
R.P.M. (turbines)	3,760	2,939	1,810
R.P.M. (propellers)	210	167	101
Speed (knots)	23·6	19·2	12·3

Gunnery Notes.—11 inch guns elevate to 25°. Load in 17 seconds. Turrets somewhat cramped; are divided by partition bulkheads.

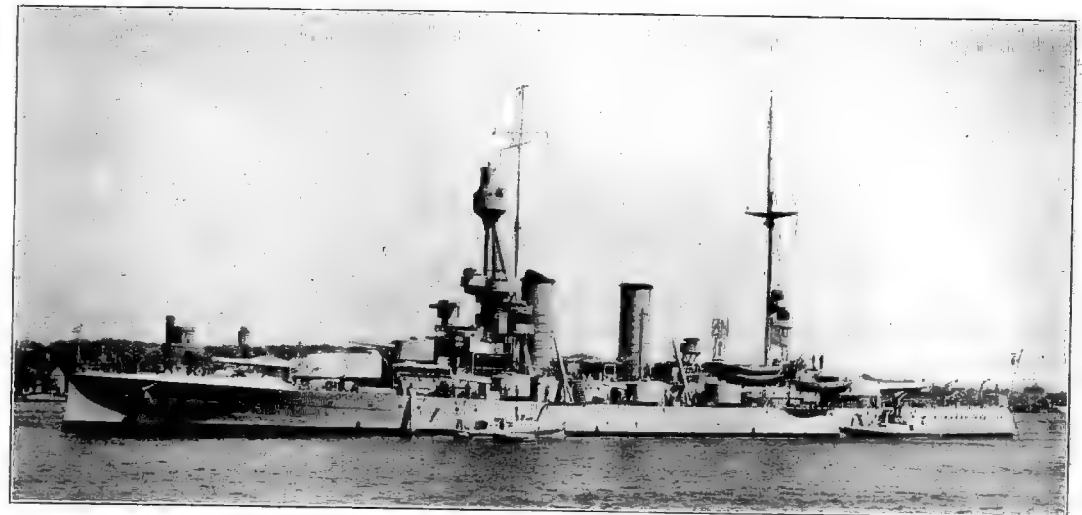
Armour Notes.—Shields to 11" guns are 8" on fore side, 4" on side, 4½" rear. Smaller gunshields are 5" front, 3" sides.

General Notes.—*Sverige* was sanctioned 1911; but upon a change of Government was cancelled by the Liberals. The nation then voluntarily subscribed a sum which at the end of April, 1912, amounted to nearly £970,000 for the building of this ship, which was estimated to cost £670,000; the balance was devoted towards commencement of *D. Victoria* and *Gustaf V* under the 1915-19 Naval Programme. Work on *D. Victoria* and *Gustaf V* was stopped during the war, owing to non-delivery of armour plates from the U.S. Building was resumed in 1919. *Sverige* and *D. Victoria* built by Gotaverken, Gothenburg, and engined by Kockum Co., Malmö, and Motala Co., respectively. *Gustaf V* (in full, *Gustaf den Femte*) built and engined by Kockum Co., Malmö. Bows of all this class are strengthened for icebreaking. They have proved excellent seaboats.



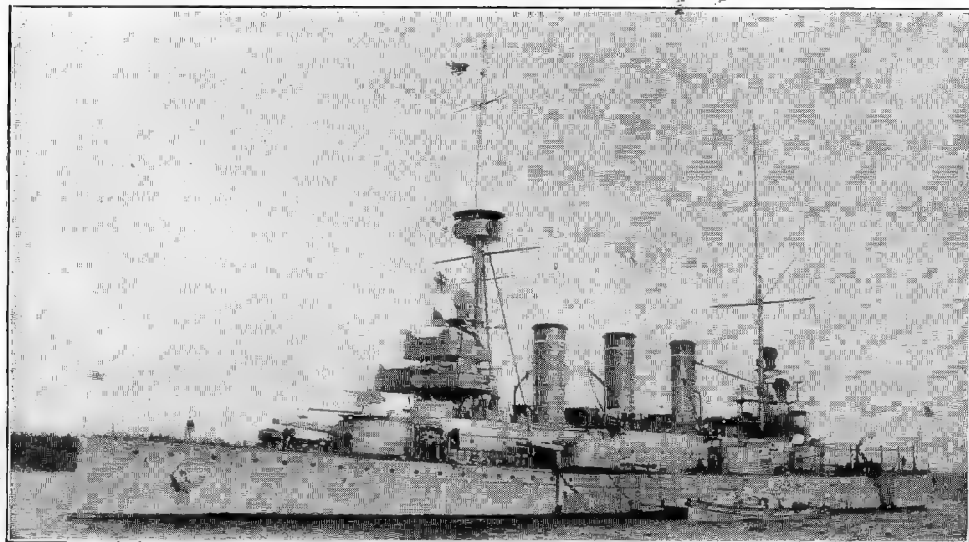
GUSTAF V. (*Dr. Victoria* of similar appearance.)

1928 Photo.



SVERIGE.

1929 Photo Ossi Janson, Esq.



OSCAR II.

1918 Photo.

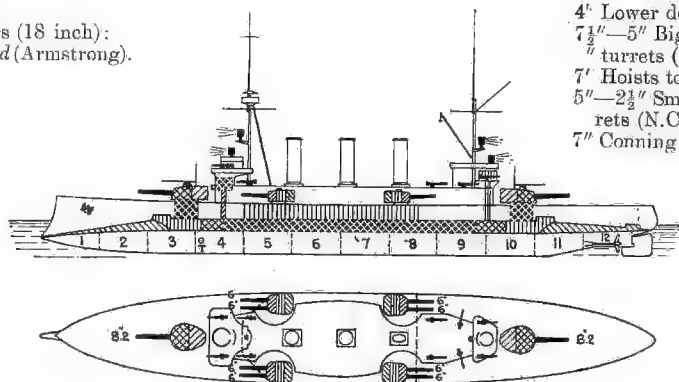
OSCAR II (1905).

Displacement, 4600 tons. Complement, 339.
Length (*w.L.*) 313½ feet. Beam, 50½ feet. Maximum draught, 18 feet.

Guns (Bofors):
2—8·3 inch, 44 cal.
8—6 inch, 50 cal.
10—6 pdr.
1—1 pdr.
Torpedo tubes (18 inch):
2 submerged (Armstrong).

Armour (Krupp):
6"—4" Belt (amidships)
2" Deck (slopes)
6" Bulkheads
4" Lower deck redoubt
7½"—5" Big gun
turrets (N.C.)
7" Hoists to these
5"—2½" Small tur-
rets (N.C.)
7" Conning tower.....

Ahead:
1—8·3 in.
4—6 in.



Astern:
1—8·3 in.
4—6 in.

Broadside: 2—8·3 in., 4—6 in.

Machinery: 2 sets 4 cylinder triple expansion. 2 screws. Boilers: 10 Yarrow. Designed H.P. 9000=18·3 kts. Coal: normal 350 tons; maximum 500 tons=2950 miles at 10 kts.

Notes.—Four searchlights carried—one on each bridge, and one on each mast. Built by Lindholmen Co., 1905-07. On trial: 9400=18·96 kts. *Oscar II* is written in full *Oscar den Andre*.



TAPPERHETEN.

(Note removal of mainmast.)

1928 Photo, O. Janson, Esq.

(ÄRAN CLASS—4 SHIPS).

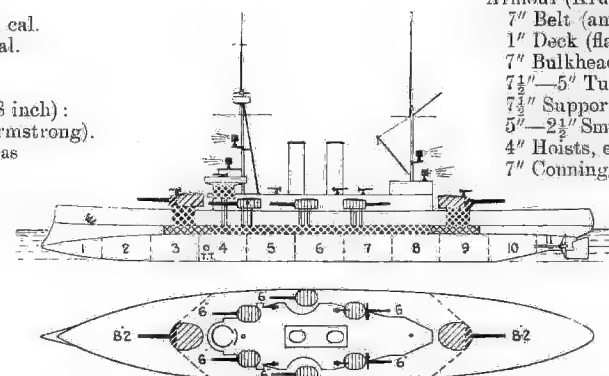
ÄRAN (Aug., 1901), **WASA** (Sept., 1901), **TAPPERHETEN** (Nov., 1901) & **MANLIGHETEN** (Dec., 1903).

Length, (*w.L.*) 287 feet. Beam, 49½ feet. Maximum draught, 16¾ to 17¾ feet.
Displacement, 3800 tons. Complement, 301.

Guns (Bofors):
2—8·3 inch, 44 cal.
6—6 inch, 45 cal.
8—6 pdr.*
1—1 pdr.
Torpedo tubes (18 inch):
2 submerged (Armstrong).
*Tapperheten only has
10—6 pdr.

Armour (Krupp):
7" Belt (amidships)
1" Deck (flat on belt)
7" Bulkheads
7½"—5" Turrets
7½" Supports
5"—2½" Small turrets (N.C.)
4" Hoists, etc.
7" Conning tower

Ahead:
1—8·3 in.
4—6 in.



Astern:
1—8·3 in.
4—6 in.

Broadside: 1—8·3 in., 3—6 in.

Machinery: 2 sets triple expansion. 2 screws. Boilers: 8 Yarrow. Designed H.P. 7400 = 17 kts. Coal: maximum, 300 tons. Endurance: 2000 at 10 kts.

Notes.—Where built: Äran, Lindholmen; Wasa, Bergsund; Tapperheten and Manligheten, Kockum. Completed: Äran, 1902; Wasa, 1903; Tapperheten, 1904; Manligheten, 1906.



THOR, as rebuilt, 1916.

1918 Photo, Karlsson, Karlskrona.

THOR (1898).

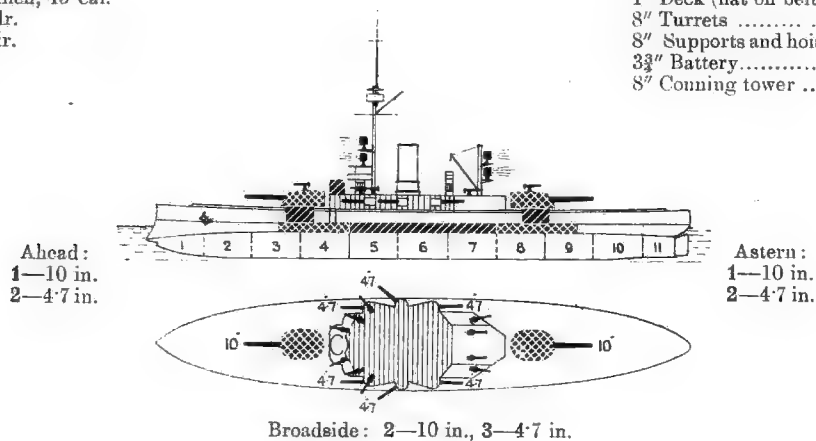
Displacement: 3690 tons. Complement, 263.

Length (*w.l.*), 278½ feet. Beam, 48½ feet. Maximum draught, 18 feet.Guns (*Canet*):

- 2—10 inch, 42 cal.
- 6—4·7 inch, 45 cal.
- 8—6 pdr.
- 1—1 pdr.

Armour (Harvey-nickel):

- 9½" Belt
- 1" Deck (flat on belt).....
- 8" Turrets
- 8" Supports and hoists
- 3½" Battery.....
- 8" Conning tower



Machinery: 2 sets, vertical triple expansion. 2 screws. Boilers: 6 Cylindrical. Designed H.P., 5000=16 kts. Coal: *normal*, 280 tons; *maximum*, 300 tons=2530 miles at 10 kts.

Notes.—4 searchlights. *Thor* was rebuilt in 1916, appearance being greatly altered. As originally built, she had two masts and two funnels. *Thor* built and engined by Bergsund Co., 1896-99.



ODEN as re-built 1915. To distinguish from *Thor*, observe that chart house is slightly deeper fore and aft, and small topmast to stump of old mainmast is much higher. As will be seen by comparing photos and plans the 4·7 inch guns are differently arranged. Has plain top on tripod mast. *Thor* has a ringed top.

1918 Photo, Karlsson, Karlskrona.

ODEN (March, 1896).

Normal displacement, 3700 tons. Complement, 267.

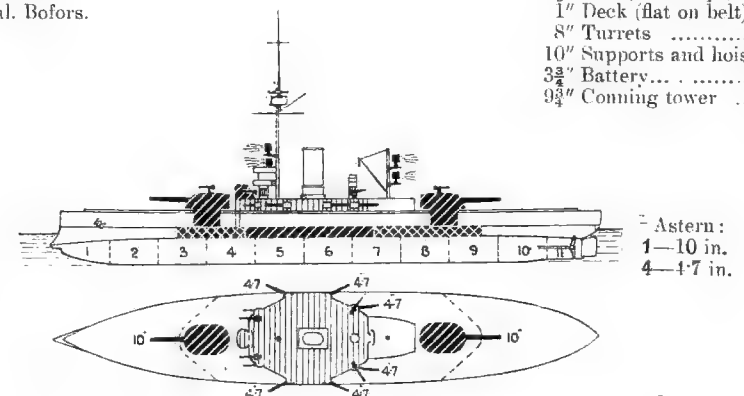
Length (*w.l.*), 278½ feet. Beam, 48½ feet. Maximum draught, 18½ feet.Guns (*Canet* and *Bofors*):

- 2—10 inch, 42 cal. *Canet*.
- 6—4·7 inch, 45 cal. *Bofors*.
- 8—3 pdr.
- 1—1 pdr.

Armour (Harvey-nickel):

- 9½" Belt (amidships).....
- 1" Deck (flat on belt).....
- 8" Turrets
- 10" Supports and hoists
- 3½" Battery.....
- 9½" Conning tower

Ahead:
1—10 in.
2—4·7 in.

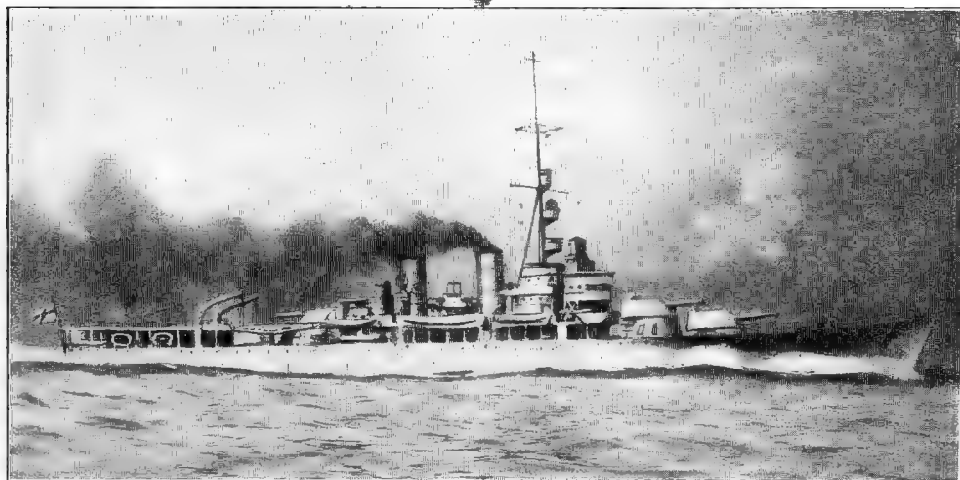


Machinery: 2 sets vertical triple expansion. 2 screws. Boilers: 6 cylindrical. Designed H.P. 5000 = 16 kts. Coal: *normal* 275 tons; *maximum*, 282 tons. Endurance: 2530 miles at 10 kts.

Laid down by Bergsund Co., 1894. Completed 1897. 4 searchlights. Re-constructed 1915, when appearance was greatly changed. As originally completed she had two military masts and two funnels.

SWEDEN—Cruisers.

Aircraft Cruiser (*Flygplankryssare*).



GOTLAND.

GOTLAND. (Laid down 1929.)

1929 Drawing, by Oscar Parkes.

Displacement: 5,600 tons. Complement, 480.
Length, (w.l.) 459½ feet. Beam, 48½ feet. Max. draught, 15½ feet.

Guns:

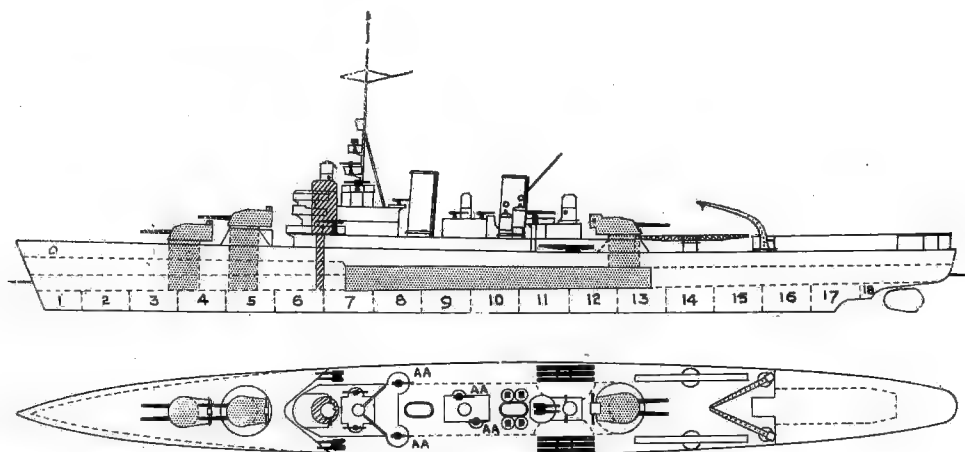
- 6—6 inch, (M. 25).
- 6—14 pdr. AA. (M. 28).
- 2—Machine guns (M. 22).

Torpedo tubes:

- (in triple deck mounting).
- 6—20 inch
- (Abreast of after conning tower).

Armour:

- 5"—1½" vertical Bulkheads.
- 1½" Uptakes
- 1½"—2" Hoists and supports
- 2" Conning Tower



Ahead:

4—6 in.

Broadside: 6—6 in.

Astern:

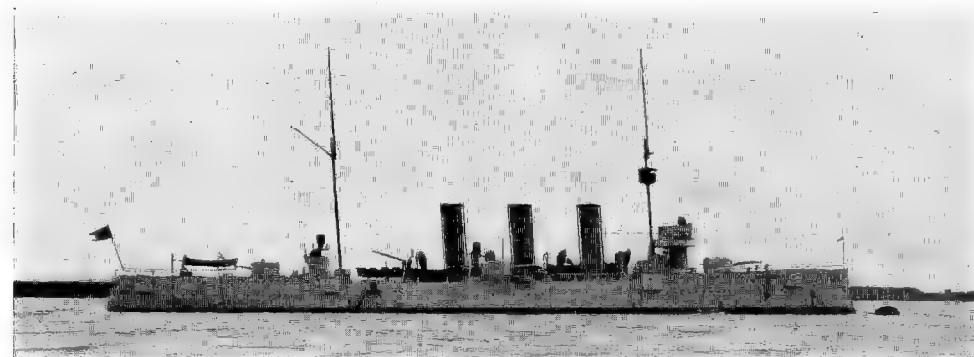
2—6 in.

Machinery: 2 sets De Laval geared turbines. 2 screws. Boilers: 4. Designed S.H.P. 40,000=28 kts.
Note.—To carry 2 catapults and 8 aeroplanes.

CRUISERS.

Armoured Cruiser (*Pansarkryssare*).

Note.—*Fylgia* normally serves as Training Cruiser.



FYLGIA.

Photo, March, 1921, Engineer-Commander C. E. Eldred, R.N. (retired).

FYLGIA (Dec, 1905).

Displacement, 5000 tons. Complement, 341.

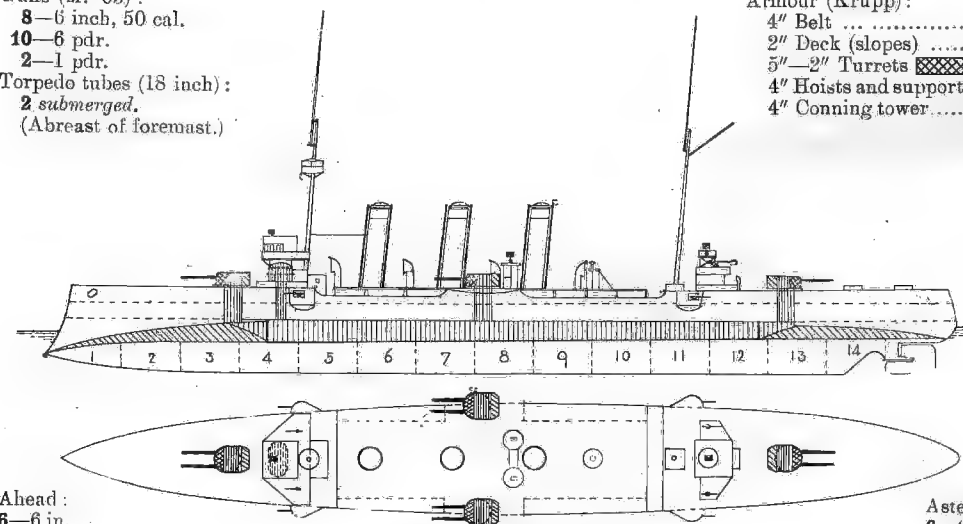
Length (w.l.), 377½ feet. Beam, 48½ feet. Max. draught, 20½ feet.

Guns (M. '03):

- 8—6 inch, 50 cal.
- 10—6 pdr.
- 2—1 pdr.
- Torpedo tubes (18 inch):
- 2 submerged.
- (Abreast of foremast.)

Armour (Krupp):

- 4" Belt
- 2" Deck (slopes)
- 5"—2" Turrets
- 4" Hoists and supports
- 4" Conning tower



Ahead:
6—6 in.

Broadside: 6—6 in.

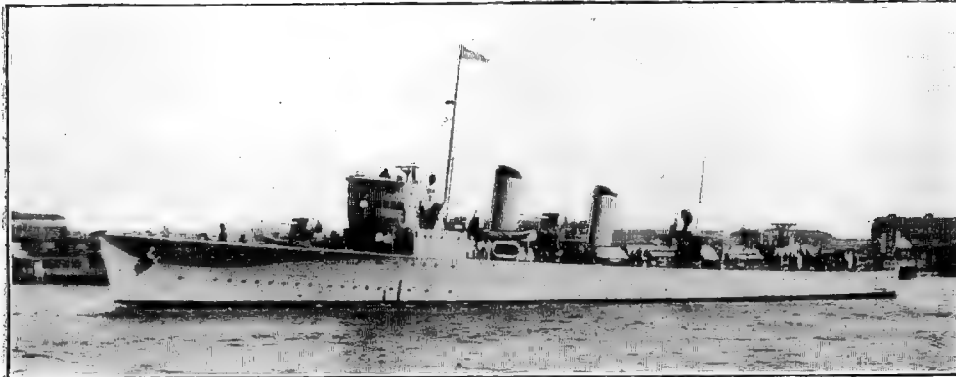
Astern:
6—6 in.

Machinery: 2 sets 4 cylinder triple expansion. 2 Screws. Boilers: 12 Yarrow. Designed H.P. 13,000=21.5 kts. Coal: normal 350 tons; maximum 900 tons=5770 miles at 10 kts.

General Notes.—Laid down by Bergsund Co., at Finnboða, in 1903, and completed 1907. Trials: 12,440 H.P. = 22.7 kts. Machinery by builders. Bow and stern sponsons removed 1926-27.

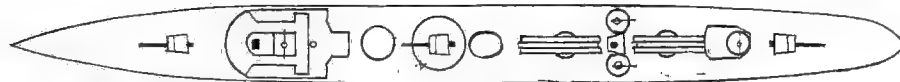
No.	Type	Date	Displacement	H.P.	Max. speed	Fuel	Complement	T. tubes	Max. draught feet.
4	<i>Ehrensköld</i>	'24—?	tons		kts.	tons			
2	<i>Wrangel</i>	'15—'18	1050	24000	35	150 (oil)	81	6	10½
2	<i>Hugin</i>	'11—'12	560	12000	34	105 + 6 oil	71	6	9½
4	<i>Wale</i>	'08—'10	460	10000	31	90 + 1½ oil	71	4	8½
1	<i>Magne (T)</i>	1905	460	8800	30	90	71	4	8½
				7200	30	80	67	2	8½

T=Thornycroft. t=turbines.

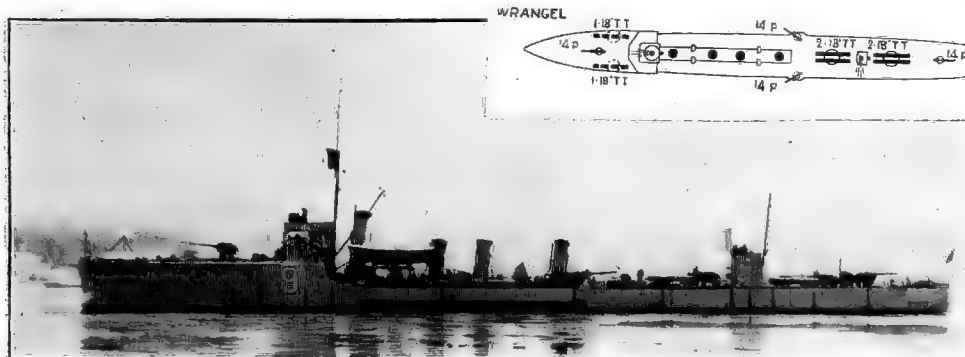


EHRENSKÖLD.

1927 Photo, Lt. D. H. Johnston, R.N.



4 *Ehrensköld* class: *Ehrensköld* (Sept. 25, 1926), *Nordenskjöld* (June 19, 1926). Built by Götaverken, Gothenburg and Kockum Co., Malmö, respectively. *Craes Horn*, *Clas Uggla*. Laid down 1928—by Kockum Co. and at Karlskrona D.Y., respectively. Displacement: 974 tons (*light*), 1050 tons (*full load*). Dimensions: 293 (w.l.) × 29½ × 10½ feet. Armament: 3—4.7 inch and 2—1 pdr. A.A. guns; 6—20.5 inch torpedo tubes in triple deck mountings. De Laval Geared turbines. H.P. 24,000 = 35 kts. Fuel (oil only): 150 tons. Radius of action: 600 miles at full speed; 1600 miles at 20 kts. Complement 125. Estimated cost: Kr.7,150,000 each. First pair completed in 1927.



WRANGEL
2 *Wrangel* class: *Wrangel* and *Wachtmeister* (Lindholmen Co., Gothenburg, both launched 1917.) 560 tons. Dimensions: 232½ × 22 × 9½ feet. Armament: 4—14 pdr., 2 machine guns, 6—18 inch torpedo tubes in two twin-deck mountings and two single mountings, P. and S. in forecabin. Designed S.H.P., 11,000 (*n.d.*), 13,000 (*f.d.*) = 34 kts. Reported to have attained 34.8 kts. on trials. Have De Laval geared turbines. Fuel: 105 tons coal+6 tons oil. Complement, 81. Completed, early 1918.



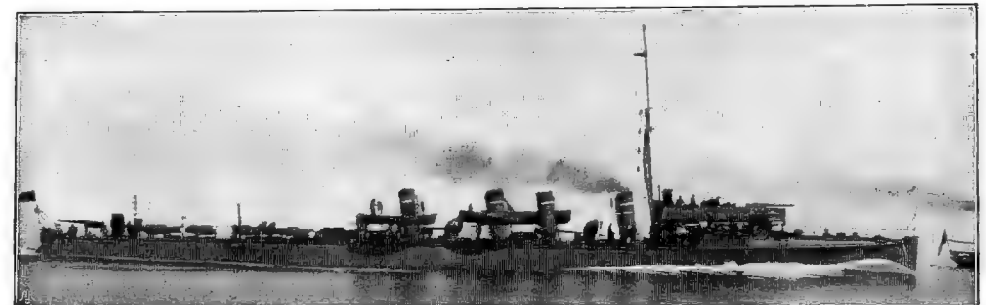
VIDAR.

1928 Photo, O. Janson, Esq.

2 *Hugin* class: *Hugin* (1911), *Munin* (1912), 460 tons. Dimensions: 215½ × 20½ × 8½ feet. Guns: 4—14 pdr., 2 machine. Torpedo tubes: 4—18 inch. 4 Yarrow boilers. Curtis turbines. S.H.P., 10,000 = 31 kts. Fuel: 90 tons coal + 1½ tons oil. Endurance: 800 miles at 15 kts. *Hugin* built by Götaverken Co., and *Munin* by Kockum Co., Malmö.

4 *Wale* class:—*Wale* (1907), *Ragnar* (1908), *Sigurd* (1908), *Vidar* ('09). 460 tons. Dimensions: 215½ × 20½ × 9 feet. Armament: *Wale*, 2—14 pdr., 4—6 pdr., 2 machine; other boats, 4—14 pdr., 2 machine; 4—18 inch tubes in all. 4 Yarrow boilers. Hull on Thornycroft lines. Coal: 90 tons. Radius of action: 920 miles at 15 kts. *Sigurd* built by Lindholmen Co., other three by Kockum Co.

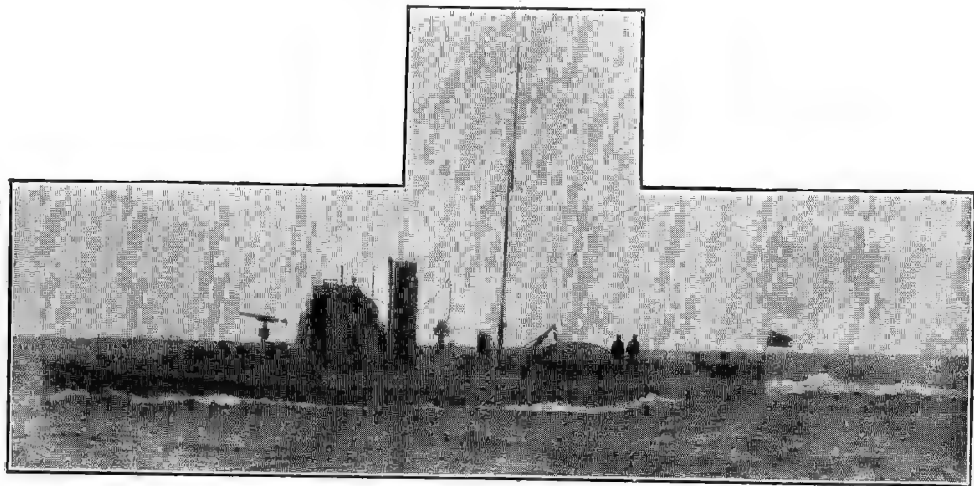
Note.—*Hugin* and *Wale* as *Magne* but:—A. T.T. in pairs; B. Guns 14 pdr.; C. No guns abeam 2 and 4 funnels.



Has mainmast now as *Wale* class above.

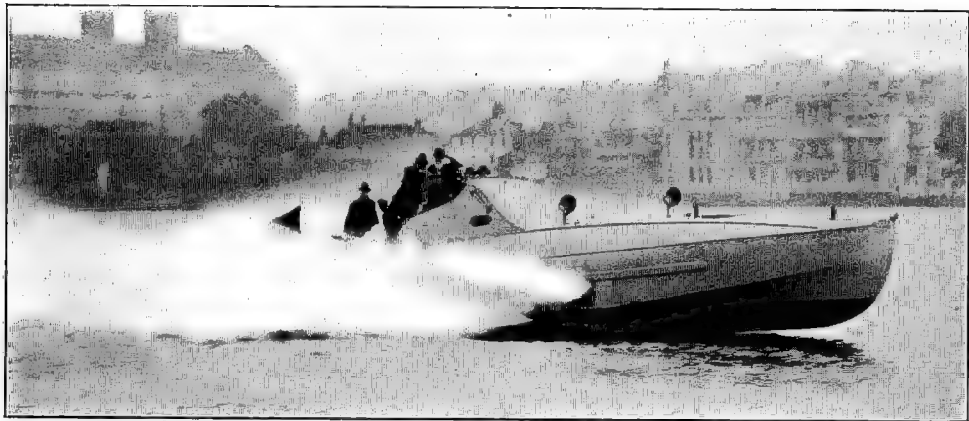
1 Thornycroft: *Magne* (1905). Dimensions: 215½ × 20½ × 8½ feet. Armament: 6—6 pdr., 2 machine, 2 single 18 inch tubes aft. 4 Thornycroft boilers. Endurance: 920 miles at 15 kts.

6 Torpedo Boats.
(Torpedbatar.)



No. 14. 1918 Photo.
Nos. 5, 6, 7, 8, 9, 14 (1906-08). Displacement, 60 tons. Dimensions: 106 × 12½ × 6½ feet. Armament: 1—1 pdr., 2—18 inch tubes. H.P. 800=21 kts. Coal: 22 tons. Complement, 14.

Motor Torpedo Boats (Motor Torpedbatar).



No. 3. 1925 Photo, by courtesy of Messrs. Thornycroft (Builders).
Nos. 3, Nos. 4. Built by Messrs. Thornycroft, at Hampton-on-Thames, 1925. Usual 55 ft. type C.M.B., with smoke screen apparatus.

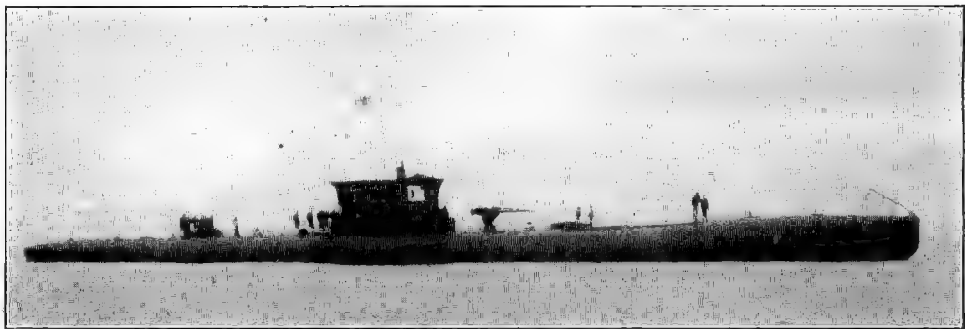
21 (+ 1 building) Submarines.

(Undervattensbatar, but officially listed as Undervattenstorpdefartyg.)

Note. - Much secrecy is observed with regard to Swedish Submarines, of which only names and numbers are published by the Ministry of Defence. The following details cannot therefore be guaranteed as exact. From photographs below it is evident that those built since *Delfinen* are of considerably larger size.

No.	Type	Date	Displacement	H.P.	Max. speed	Fuel or Battery Endurance.	Complement	T. tubes	Max. draught
	First Class :—		tons		kts.				feet
3	<i>Draken</i>	'24—'2	700	...	15	5,600 miles at 10 kts.	...	...	...
1	<i>Valen</i> (Minelayer)	'23—'25	850	...	9	...	...	Minelayer	...
3	<i>Båren</i>	'20—'22	500	2800	15	360 miles at 15 kts.	...	4	...
4	<i>Hagen</i>	'15—'22	650	...	9	54 miles at 6 kts.	...	4	...
3	<i>Abborren</i>	'15—'22	450	...	...	...	...	4	...
1	<i>Delfinen</i>	1915	250	800	15	...	17	2	...
2	<i>Tumlaren</i>	1914	370	...	9	...	...	...	...
	Second Class :—								
3	Numbered boats	'09—'12	180	1000	15	1500 miles at 10 kts.	17	2	...
			230	290	8	40 miles at 5 kts.	...	...	...

1st Class Submarines.

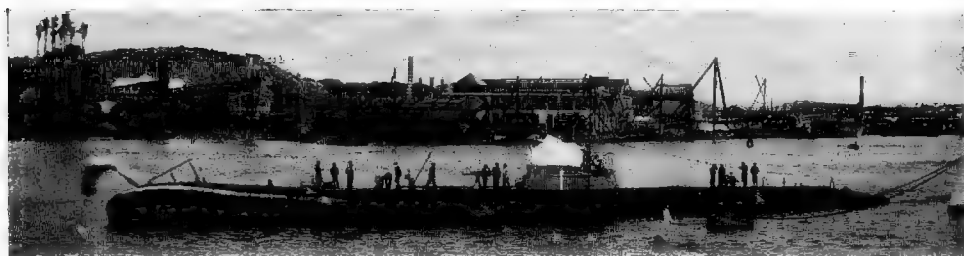


DRAKEN. 1929 Photo.

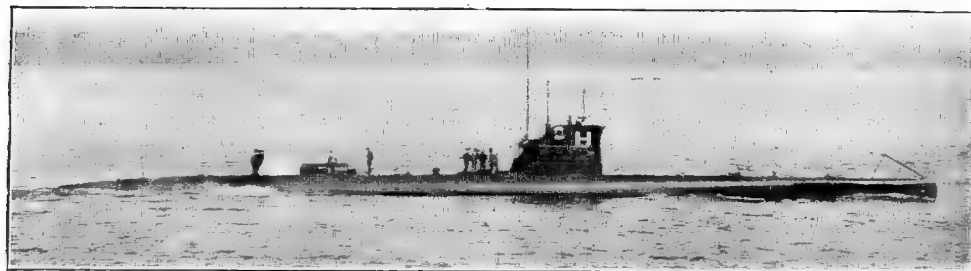
3 *Draken* class : *Draken* (20th Oct., 1926), *Gripen* (1927), *Ulven*. Laid down at Karlskrona, 1924, 1925 and 1928 respectively. No particulars yet available, but believed to be enlarged and improved *Bårens*, of comparatively high surface speed, for working in conjunction with the Fleet. Unofficially stated to be armed with 1—3 inch gun and 4—21 inch tubes.

Valen (May 6th, 1925). Fitted for laying mines on the Normand-Fenauz system. Design generally follows that of French *Pierre Chailley*.

1st Class Submarines—continued.



3 *Bavern* class: **Bavern**, **Illern**, **Uttern** (1921—1922), built by Karlskrona D.Y. and Kockum Co., Malmö. H.P.: 2,800 = 15 kts. on surface, — = 9 kts. submerged. Guns: 1—6 pdr. A.A., 1 M.G. Tubes: 4—20.8 inch (bow). 8 torpedoes carried.

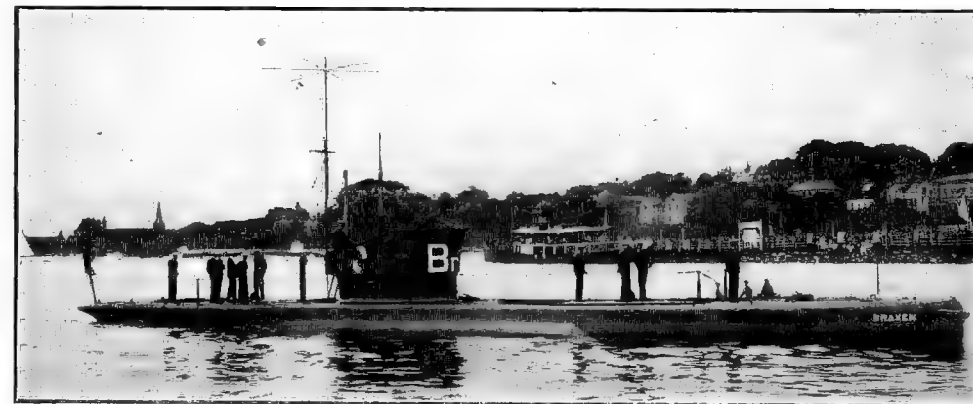


HAJEN.

1924, Official Photo.

3 *Hajen* class: **Hajen** ('20), **Sälen** ('20), **Valrossen** ('20), built by Kockum Co., Malmö. Guns: 1—6 pdr. A.A. Tubes: 4. Further details not known.

1st Class Submarines—continued.



BRAXEN.

1928 Photo, O. Janson, Esq.

4 *Abborren* class: **Abborren** ('17), **Braxen** ('18), **Gäddan** ('18), **Laxen** ('18), built by Karlskrona D.Y. Similar to *Hajen* class.

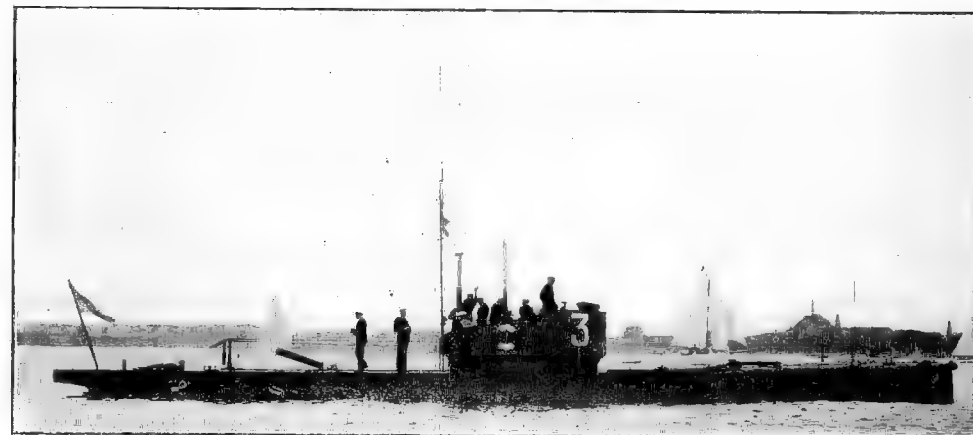


Photo, Karlsson, Karlskrona.

Delfinen (Bergsund Co., Stockholm, 1915). Armament: 1 machine gun, and 2—18 inch bow tubes.

2 *Tumlaren* class: **Svärdfiskén**, **Tumlaren** (Kockum Co., Malmö, 1914). 2—18 inch bow tubes. Of very similar appearance to *Delfinen*.

2nd Class Submarines.



N: r 3.

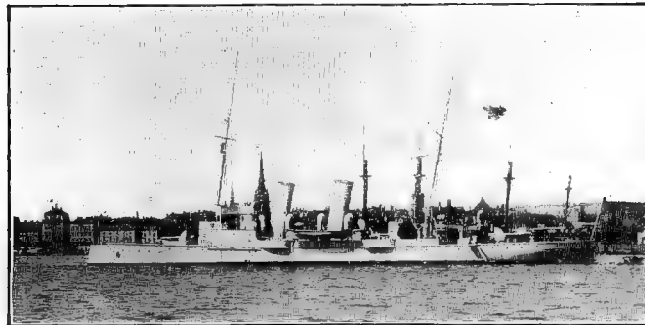
1928 Photo, O. Janson, Esq.

N: r 2, **N: r 3**, **N: r 4**, built by Karlskrona D.Y. and by Motala Co., 1910-11. Dimensions: 139½ × 14½ × 9½ feet. 2—18 inch tubes. Radius of action at full speed (15 kts.), 475 miles.

SWEDEN—Miscellaneous.

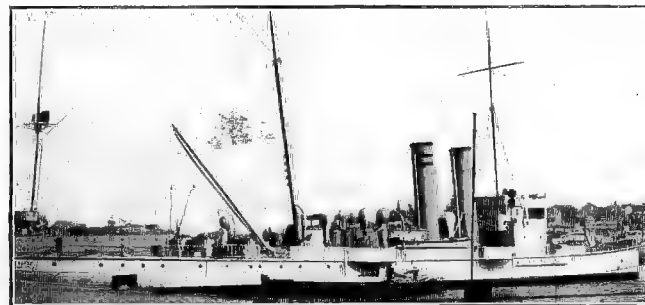
Torpedo Gunboats.

Officially classed as Cruisers (*Torpedkryssare*).



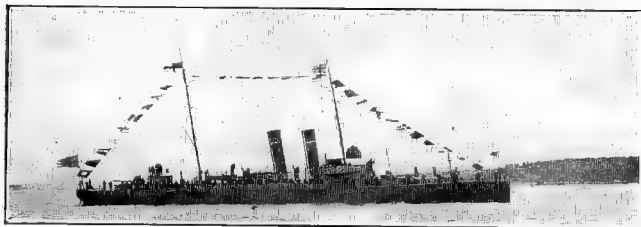
PSILANDER.

1926 Photo, O. Janson, Esq.



J. BAGGE.

1928 Photo, Ossi Janson, Esq.



ÖRNEN (distinguished by cut-away stern).

PSILANDER (1900), 814 tons, **JACOB BAGGE** (1899), 835 tons,

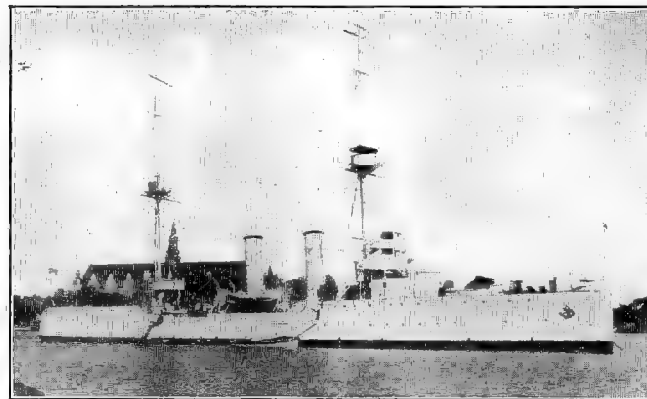
ÖRNEN (1896), 844 tons. Designed H.P. 4000=20 kts., *natural draught*. Coal, 100 tons. Armament: 2—4·7 inch, 4—6 pdr., 1—15 inch *submerged* bow tube.

General Notes: To distinguish between these ships compare relative positions of foremast, bridges, and fore funnel.

TORPEDO GUNBOATS, DEPOT SHIPS, etc.

Minelayer (*Minfartyg*).

(Officially classed as a Cruiser).



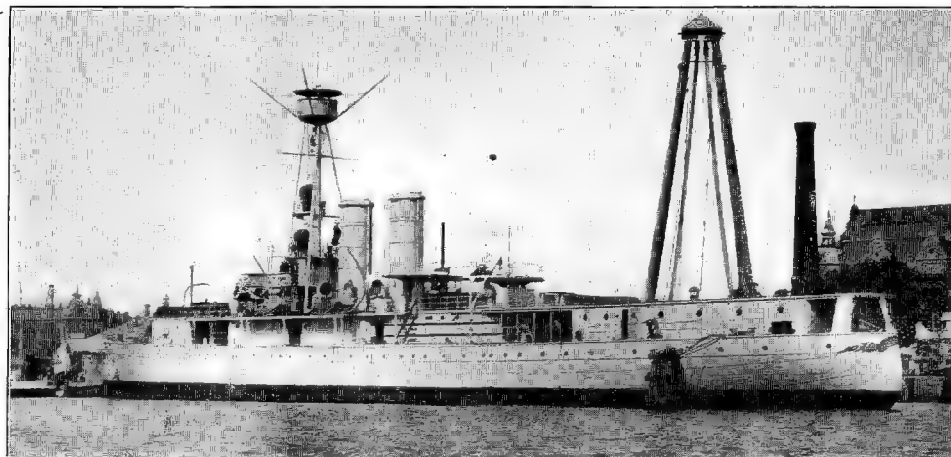
CLAS FLEMING.

1926 Photo, O. Janson, Esq.

CLAS FLEMING (1914). 1,800 tons. Dimensions: 263 × 34 × 14 feet. Guns: 4—4·7 inch (50 cal.), 4 machine. Parsons turbines. H.P. 7000=20 kts. Complement, 175.

Depôt Ships (*Depåfartyg*).

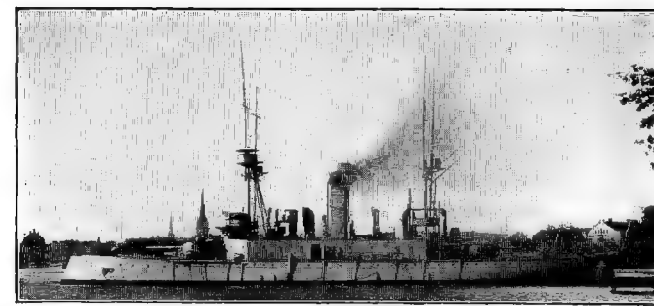
Note:—Other old Vessels used as Receiving Ships are *Vanadis*, *Freja*, attached to Flying Station, and *Norrköping*.



DRISTIGHETEN.

1924 Photo, O. Janson, Esq.

DRISTIGHETEN (Lindholmen Co., 1900). 3600 tons. Dimensions: 285 × 48½ × 17 feet. Guns: 4—14 pdr. H.P. 5000=16 kts. Coal: 310 tons. Is an old battleship converted into an Aircraft Tender and Depôt Ship. Appearance, originally similar to *Arán* type, has been greatly altered by conversion.



GÖTA.

1927 Photo, O. Janson, Esq.



SVEA.

1922 Photo.

NIORD (Lindholmen Co., 1898). Ex-Battleship. 3700 tons. Dimensions: 278½ × 48½ × 18 feet. Guns: Mostly removed. Appearance and other particulars generally similar to *Thor*, on an earlier page, of which ship she was originally a sister.

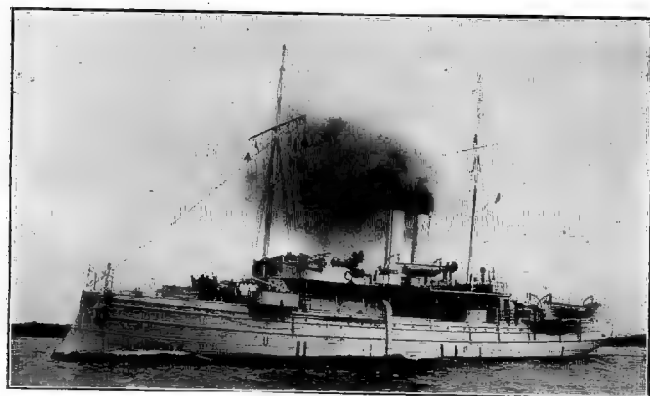
GÖTA (Lindholmen Co., 1889). Old Battleship, somewhat similar to *Svea*, but 3350 tons. Dimensions: 258½ × 48 × 17¼ feet. Guns: now mostly removed.

SVEA. Old Coast Defence Battleship, built by Lindholmen Co., 1886, rebuilt 1904 and 1920. 3050 tons. Dimensions: 248·4 × 48·5 × 16·4 feet. Guns: 4—4·7 inch, 2—6 pdr. (AA). 2 M.G. Armour: 11½"—8" Belt, 2" Decks. 2 screws. 6 cyl. boilers. I.H.P. 4650=15 kts. Coal: 220 tons. Fitted as a depot ship for Submarines.

MISCELLANEOUS.

Miscellaneous—SWEDEN

Depot Ships—continued.



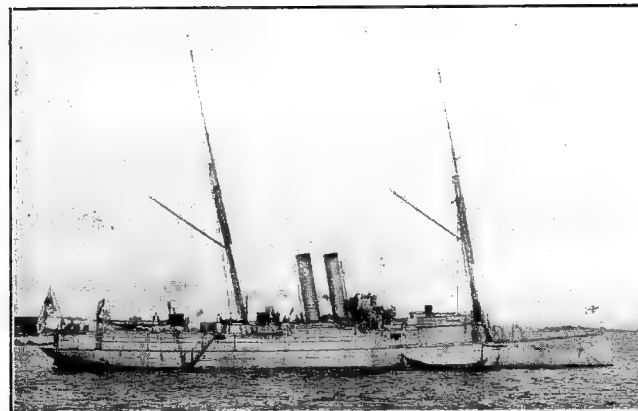
BLENDÅ.

1928 Photo, O. Janson, Esq.

BLENDÅ* (1874, re-built 1908). 500 tons. Guns: 2—6 pdr. Speed: 11 kts. Coal: about 95 tons. (Old Gunboat.)

* Officially listed as Depot Ship but duties on which employed are not known. It is reported that she is used as a repair vessel.

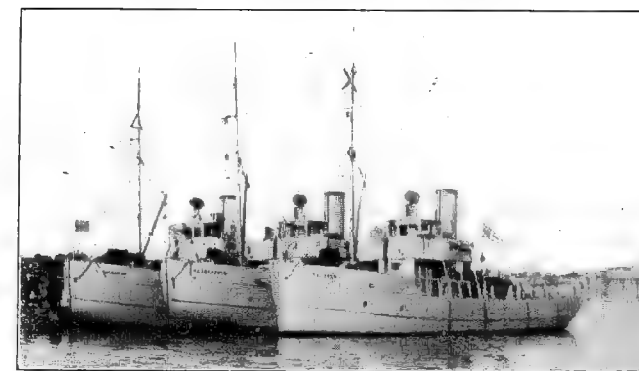
Depot Ships—continued.



1918 Photo, Karlsson, Karlskrona.

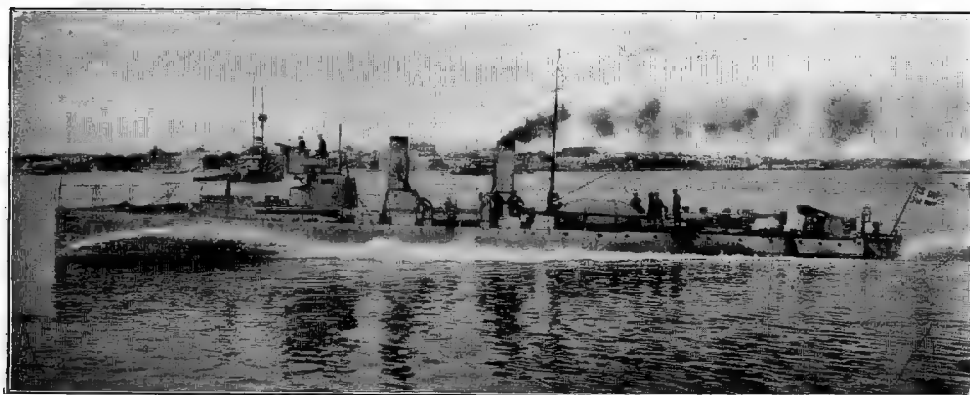
SKULD (1879). Old Gunboat, 604 tons. Guns: 4—6 pdr. Speed: 13½ kts. Coal: 94 tons.

35 Vedette Boats (Vedettbåtar).



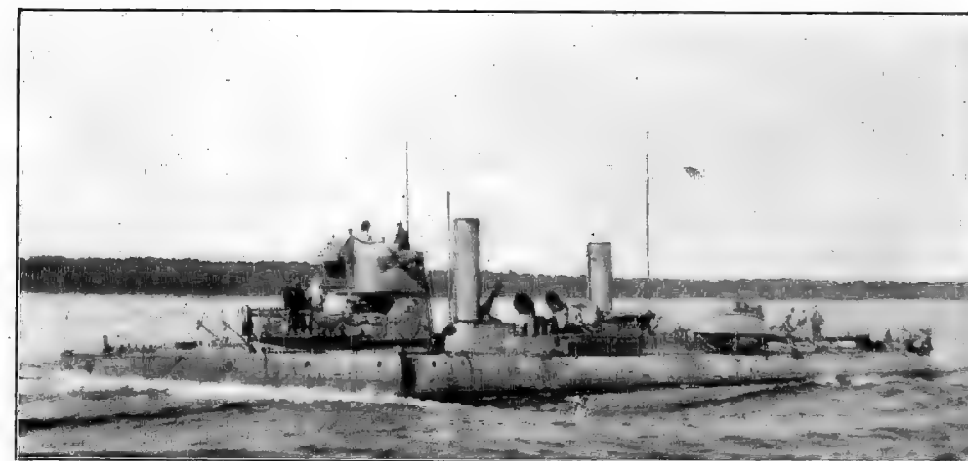
1921 Photo.

SÖKAREN, SVEPAREN, SPRÄNGAREN (1918, Motala Co.). 227 tons. Dimensions: 85.3 × 23 × 9.8 feet. H.P. 400 = 11 kts. Guns: 1—6 pdr. Complement, 18.



CASTOR, POLLUX, N: r 38.

1924 Photo.



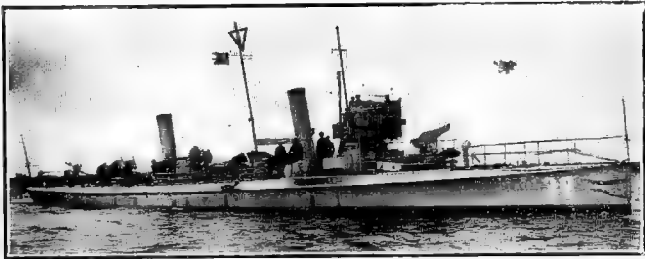
ARCTURUS (other 13 similar).

1924 Photo.

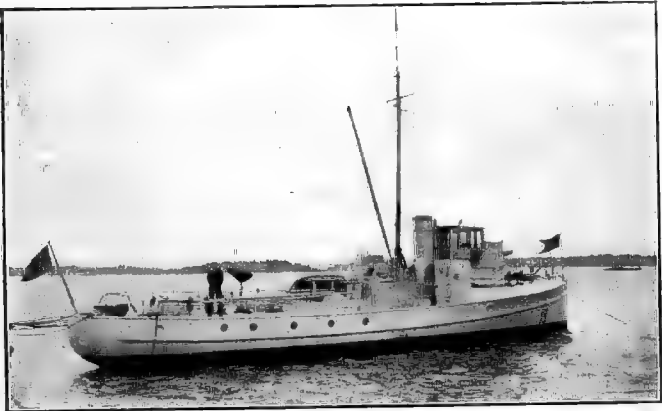
17 Castor class: **Astrea** ('08), **Castor** ('09), **Iris** ('08), **Pollux** ('09), **Thetis** ('08), **Spica** ('08), **Vega** ('10), **Vesta**, **Argo**, **Antares**, **Arcturus**, **Aitair**, **Polaris**, **Perseus**, **Regulus**, **Rigel** ('09-'10), **N: r 38** (1905) (ex *Plejad*). Displacement: 124 tons. Dimensions: 124½ to 128 × 14½ × 8½ feet. Armament: (except for N: r 38, *Castor* and *Pollux*, which have 2—1 pdr.), 2—6 pdr. H.P. 2000 = 25 kts. Coal: 18 tons. Are ex-torpedo boats with tubes removed. All built in Sweden by Karlskrona D.Y., Bergsund Co. and Götaverken Co., Gothenburg.

(Continued on next page.)

SWEDEN—Miscellaneous.
Vedette Boats—continued.



N: R 32. 1928 Photo, O. Janson, Esq.
N: r 27—37, by Karlskrona D.Y., Bergsund Co. and Lindholmen Co., 1898-1904. 110—120 tons. H.P. 1300=23 kts. Fuel: 13—20 tons. Guns: 2—1 pdr. Complement, 15—18. All are ex-Torpedo boats with tubes removed.

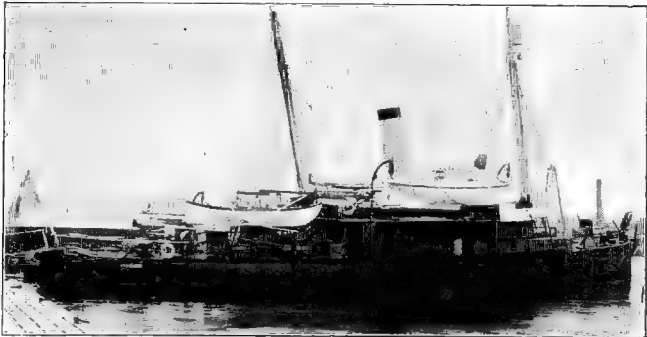


1926 Photo, by courtesy of the Ministry of Defence.
N: r 19 (1914). 70 tons. Guns: 1—1 pdr., 1 M.G. Speed: 10 kts. (oil motor). Was originally rated as "Lysmaskinbat." ("Searchlight Boat.")



Photo, S. Anderson, Esq.
N: r 25—23 (ex-T.B. 81, 83, 85, 1903). 62—55 tons. Speed, 20 kts. Guns: 1—1 pdr. Ex-Torpedo boats with tubes removed.

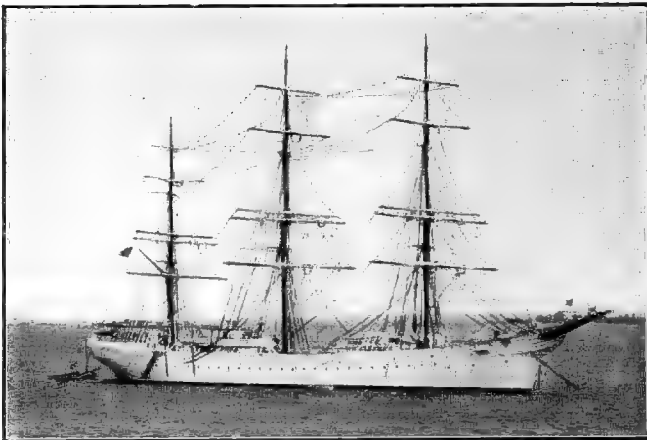
MISCELLANEOUS.
For Various Special Services.



SVENSKSUND. 1928 Photo, O. Janson, Esq.
(Officially rated as a Gunboat.)
SVENSKSUND (1891). 394 tons. Guns: 2—6 pdr. H.P. 400=12½ kts. Coal: 50 tons.
Note.—This ship is employed as (a) a Salvage Ship, (b) a Surveying Ship, (c) a Fisheries Protection Vessel, (d) an Ice Breaker, (e) a Repair Ship, and (f) a Training Ship, according to season of the year and when necessity arises for her use on any of these duties.

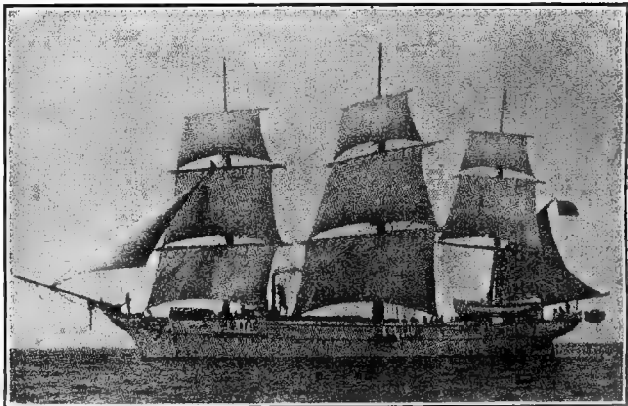
Training Ships (*Övningsfartyg*).

Cruiser **FYLGIA** (previously described) employed as Training Ship, with various gunboats as Tenders.



AF CHAPMAN. 1925 Photo, by courtesy of the Ministry of Defence.
AF CHAPMAN (ex-G. D. Kennedy, ex-Dunboyne). (Whitelaven S.B. Co., 1888). Iron ship of 1493 tons gross, 1319 tons net. 243×37½ feet. Purchased 1923 for use as a Training Ship.

Training Ships—continued.



JARRAMAS. 1917 Official Illustration.
JARRAMAS (1900). 337 tons.
NAJADEN (1897). 355 tons
FALKEN (1877). 138 tons.

Note.—These Training vessels have no motive power except sails.

New Construction.

The following programme was approved in 1927:—

Type.	To be built between		
	1927-32.	1933-38.	
Coast Defence Vessels	—	1
Aircraft Cruiser	1†	—
Destroyers	2*	2
Vedette Boats	4	4
Submarines, Type A (<i>Draken</i>)	1*	—
Submarines, Type B (<i>Valen</i> ?)	2	4



* Laid down 1928.
† " " 1929.

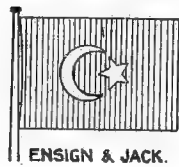
TURKISH FLEET.

Silhouettes, etc.—TURKEY

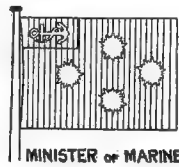
Flags.

Note.—Mercantile flag is same as Ensign.

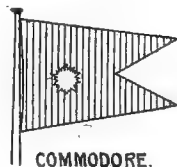
RED  WHITE 



ENSIGN & JACK.



MINISTER OF MARINE.



COMMODORE.

Minister of National Defence :—Abdul Halik Bey.

Under-Secretary for Navy :—Captain Mehmet Ali Bey.

Colour of Ships :—Khaki.

General Notes.—A programme of new construction is to be undertaken when funds are available, and the present naval base at Ismid will be converted into a modern dockyard. A 25,000 ton floating dock has been installed (in 1926), but sustained considerable damage when the *Yavuz Sultan Selim* was placed in it. It has been proposed to invite a foreign naval mission to undertake training and reorganisation of Turkish Navy.

Shipbuilding Programme, as amended 1929, includes : 6 Flotilla Leaders; 12 Submarines; and 6 Motor Launches.

Uniforms.



CAPTAIN



LIEUT. CAPTAIN.



COMMANDER



LIEUT. COMMANDER



LIEUTENANT



SUB-LIEUTENANT

BRITISH.
Captain
Commander

Lieut. Commander
Lieutenant
Sub-Lieut.
Midshipman

TURKEY.
= Galion Capitani.
= Fregate Capitani.
= Corvette Capitani.
= Birindji Yuzbachi
= Yuzbachi.
= Mulazim.
= Mehendis.

Mercantile Marine.

(From "Lloyd's Register," 1929 figures.)

Total gross tonnage, 172,096.

Scale : 1 inch = 160 feet.

RECOGNITION SILHOUETTES.

ONE FUNNEL.



KEMAL REIS class (3)
(Gunboats).



AIDAN REIS.
(Gunboat).



MEDJIDIEH.
(under reconstruction?).

TWO FUNNELS.



PEIK-I-SHEVKET.
(Torpedo Gunboat.)



YAVUZ SULTAN SELIM.



ERTOGRUL.
(Presidential Yacht.)



TOURGOUT REIS.
(Training Ship.)

THREE FUNNELS.



HAMIDIEH.

TORPEDO CRAFT.



Moussoul t.b.



Samsoun class (3) t.b.d.

YAWUZ SULTAN SELIM (ex German *Goeben*, March, 1911).

Displacement, 22,640 tons. Complement, 1013.

Length (w.l.), 610½ feet. Beam, 96 ft. 10 in. Draught (max. load), 26 ft. 11 in.

Guns (see Notes):

- 10—11 in. 50 cal.
- 10—5.9 in. 45 cal.
- 8—3.4 in. 45 cal.
- 2 M.G.

(1 landing)

Torpedo tubes (19.7 in.):

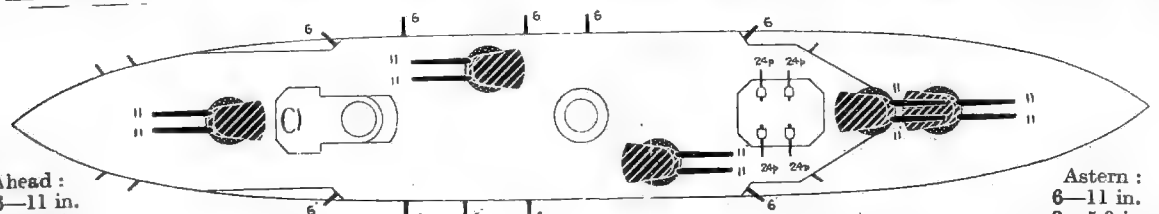
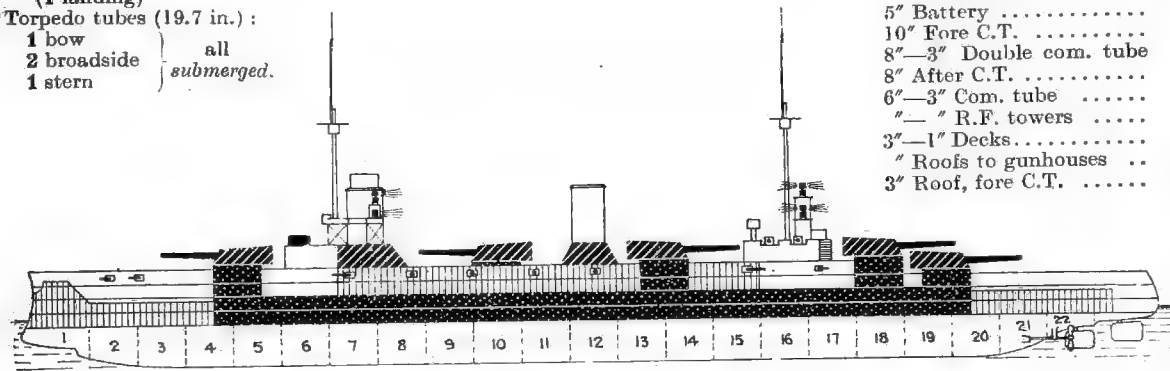
- 1 bow
 - 2 broadside
 - 1 stern
- all
submerged.

Anti-Torp. Pro.:

2"—1" deep H.T. Steel B.H., between extreme
barbettes: Minute internal subdivision.

Armour (Krupp):

- 10½" Belt (amidships) tapers
to 6" at top and 5" below
- 3½" Belt (bow and stern)
- 9"—8" Barbettes
- 8" Gunhouses
- 5" Battery
- 10" Fore C.T.
- 8"—3" Double com. tube
- 8" After C.T.
- 6"—3" Com. tube
- " " R.F. towers
- 3"—1" Decks
- " Roofs to gunhouses
- 3" Roof, fore C.T.



Ahead:
6—11 in.
2—5.9 in.
1—19.7 in. T.T.

Broadside: 10—11 in., 5—5.9 in., 2—19.7 in. T.T. (angling 30° before
to 30° abaft beam).

Astern:
6—11 in.
2—5.9 in.
1—19.7 in. T.T.

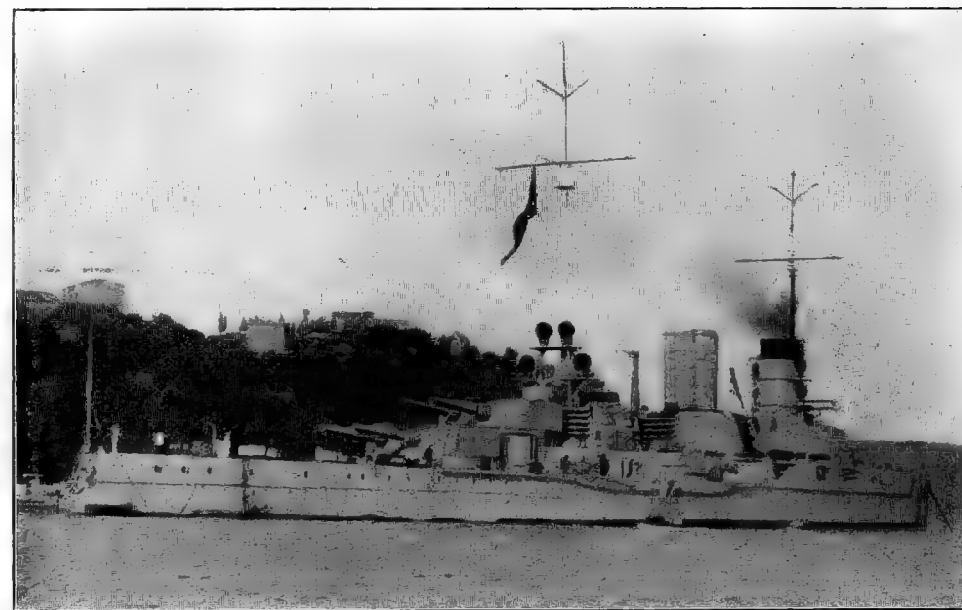
Machinery: Parsons turbine, 4 shaft, direct drive. Boilers (see *General Notes*): 24 Schulz-Thornycroft = German "Marine Type." Designed H.P. nominally 52,000 = 25.5 kts., but on trials she developed 70,000 H.P. = 28 kts. Coal: normal about 1000 tons; maximum 3050 tons. Oil fuel: 200 tons.

Gunnery Notes.—All guns German Navy Models, 5.9 inch range up to 16,500 yards. Two R.F. towers are sunk into the deck, near amidships (echelon) barbettes. All range-finding and fire-control instruments were rendered useless by Germans before Armistice, 1918. Under the Penhoët Yard's contract for refit, a French fire control system will probably be installed.

Torpedo Notes.—Torpedoes and torpedo tubes German Navy type. Torpedoes probably German G VII** (23-ft. steam heater type) with 430 lbs. charge, and max. ranges of (a) 11,700 yards at 28 kts., (b) 5,500 yards at 35 kts. Stern submerged torpedo tube is on starboard quarter. 8—60" controlled S.L. Torpedo nets removed during War.

Armour and Protection Notes.—Like all German built Battle Cruisers, this ship is heavily armoured and minutely subdivided. Main belt between extreme barbettes is about 350 feet long, 11" at w.l., tapering to about 8" on upper edge, and 6" on lower edge. Barrette bases only 1" where covered by belt.

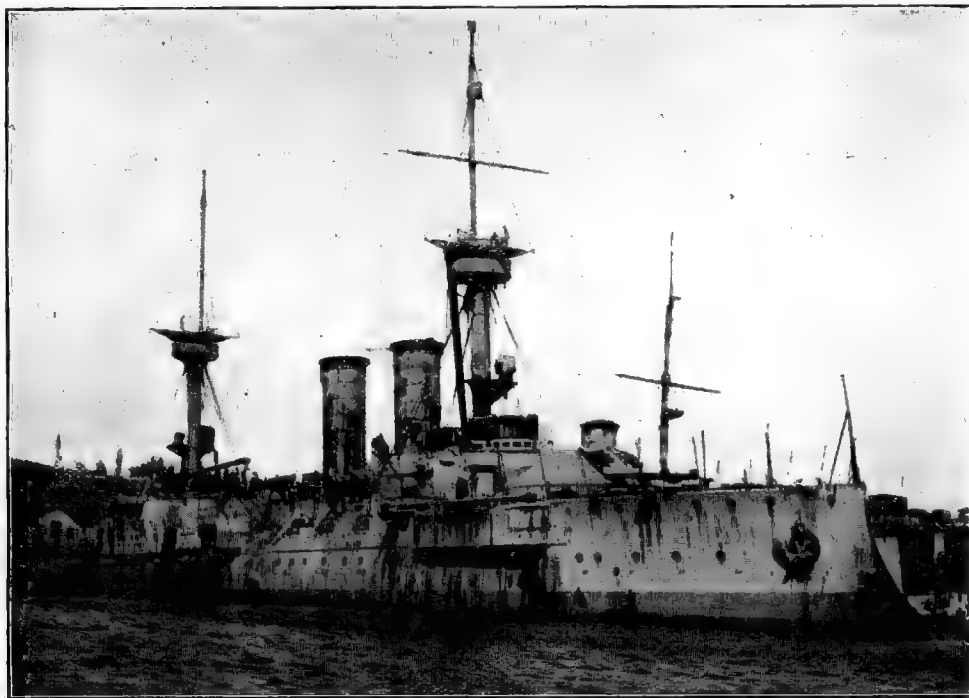
Engineering Notes.—Endurance is (a) 3,350 miles at 10 kts., (b) 2,370 miles at a continuous max. sea-going speed of 23 kts.



YAWUZ SULTAN SELIM.

1921 Photo, Tarik Hussein, Esq.

General Notes.—Laid down, August, 1909, by Blohm & Voss, Hamburg, under 1909 German Navy Programme, as a sister to German *Moltke*. Completed, July, 1912, and proceeded to Mediterranean about 1913, with Cruiser *Breslau*, it being intended that these two ships should operate from Austro-Hungarian naval bases. With *Breslau*, this Battle Cruiser escaped from Messina to Constantinople in the first days of the War, and was nominally transferred to the Turkish Navy as the *Sultan Selim*, the *Breslau* (now sunk) becoming the pseudo-Turkish *Midilli*. On November 18th, 1914, *Goeben* fought an indecisive action with the three Russian pre-Dreadnoughts of the *Ecstaf* type. During this action, or shortly afterwards, *Goeben* was heavily injured by a double mine explosion. The first mine struck the starboard bows over the provision storerooms, shattering the hull from the belt to the docking keel; the second mine exploded on the port side over a coal bunker, disabling the third barrette. It took three months to effect repairs at Constantinople by means of cofferdams. *Goeben* appears to have been again mined on another date during 1915 or 1916. During 1917 she was again injured by bombs dropped from a British Handley-Page aeroplane during a raid on Constantinople. In January, 1918, *Goeben* and *Breslau* sank the British Monitors *Raylan* and *M 28* at Imbros, but both ships were mined. *Breslau* sank, and *Goeben* was beached near Nagara Point, where she was repeatedly attacked by bombing planes. An unsuccessful attempt was also made by submarines against her. She was towed off, and after the capture of Sevastopol she was taken there for 24 hours to effect small temporary repairs. *Goeben* has probably had more narrow escapes from destruction than any other Dreadnought or Battle Cruiser in existence having been mined five times; she certainly is a remarkable testimonial to the thorough under-water protection of German Dreadnoughts and Battle Cruisers. Present condition is very bad, as all but 2 of her 21 boilers are out of action, and there are two unrepaired holes in hull below water-line. A contract was signed in December, 1926, with the Chantiers de St. Nazaire (Penhoët), for the repair and refit of this battle cruiser at Ismid; the work was considerably delayed owing to a floating dock proving unequal to her weight, and completion was not reached till autumn of 1929.



TOURGOUT REIS (Training Ship for Naval Cadets). 1927 Photo, Capt. B. C. Reynolds.
TOURGOUT REIS (1891, rebuilt 1903). 9901 tons. Complement, 579. Dimensions: 379½ × 64 × 24½ feet (*maximum* draught). Guns: 2—11 inch, 40 cal. + 4—11 inch, 35 cal., 2—3.4 inch, 40 cal. (F.L.A.K.) A.A., 4 M.G. Torpedo tubes (18 inch): 2 *submerged* (broadside). Armour (compound): 15½" Belt amidships, 12" Belt at ends, 2½" Deck, flat on belt, 11½" Barbettes, with 5" shields, 3" Battery, 12" C.T. Machinery: 2 sets vertical triple expansion. Boilers: 12 cylindrical return flame (new in 1909). Designed H.P. 9000 = 17 kts.; present speed much less. Coal: *normal*, 600 tons; *maximum*, 812 tons + 98 tons oil. Endurance: 5300 miles at 10 kts., 2600 miles at 15½ kts. Originally was German battleship *Weissenburg*. Purchased 1910. Refitted 1923-24.

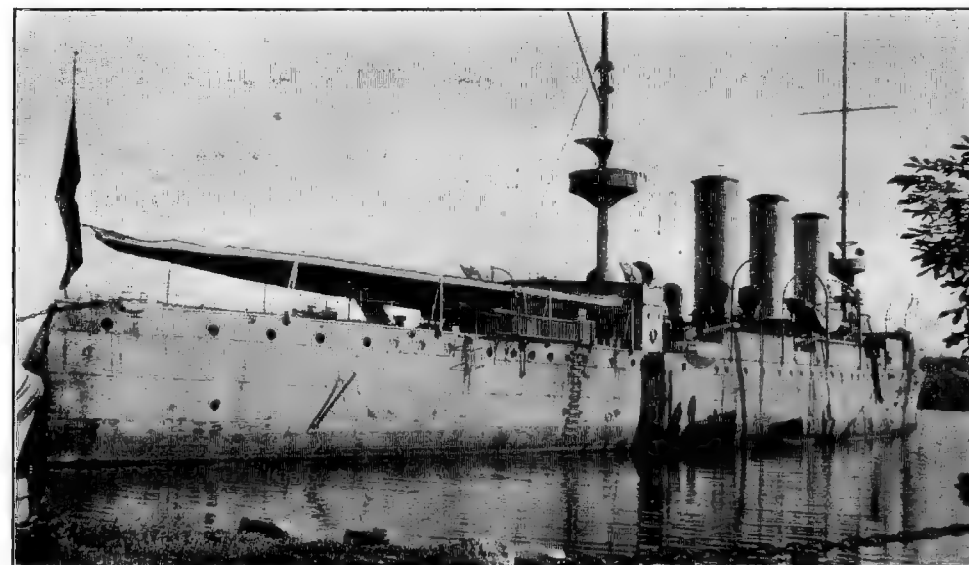
Note.—Originally carried 4—11 inch, 40 cal., and 2—11 inch, 35 cal.; but two of former were replaced by 35 calibre guns from Germany during the War. A sister Ship (*Hairidin Barbarossa*) was sunk during the War.

Torpedo Gunboat (*Torpedo Muhribi*).



PEIK-I-SHEVKET (Nov., 1906). Built at Krupp's Germania Yard, Kiel. 1014 tons. Dimensions: 262½ × 27½ × 9½ feet. Guns: 2—2.9 inch, 4—6" pdr. Torpedo tubes: 3—18 inch. Designed H.P. 5100 = 22 kts. Coal: 240 tons. 25 mines carried. Complement 105. *Note*.—Torpedoed by British Submarine *E 14*, during 1915, but beached and salvaged. Sister ship, *Berk-i-Satvet*, now non-effective.

TURKISH CRUISERS (*Muhafasali Kruvasor*).



1924 Photo, Tarik Hussein, Esq.

HAMIDIEH (ex *Abdul Hamid*, Armstrong, Sept., 1903). 3830 tons. Complement, 302. Dimensions: 368 × 47½ × 16 feet (*mean* draught). Guns: 2—5.9 inch, 45 cal. Krupp, 8—3 inch (75 m/m) 50 cal. Schneider. Torpedo tubes (18 inch): 2 *above water*. Armour: 4" Deck. Machinery: 2 sets 4-cylinder triple expansion. 2 screws. Boilers: Cylindrical. Designed H.P. 12,000 = 22 kts. (*forced* draught). Present best speed about 14 kts. Coal: *normal*, 275 tons; *maximum*, 750 tons. Endurance: 5550 miles at 10 kts. At present serves as Training Ship for Naval Cadets. In need of refit.

Reconstructing; has only 1 funnel at present.

(For appearance, vide Silhouette.)

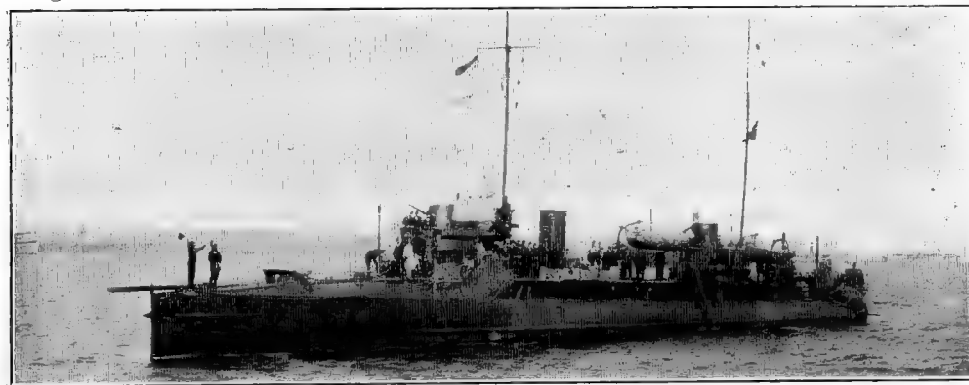
MEDJIDIEH (ex Russian *Prut*, ex Turkish *Medjidieh*, July 25th, 1903). Mined and sunk in Black Sea, 1915. Salvaged, repaired and re-fitted at Nicolaieff for Russian Navy, 1915-16. Seized by Austro-German Armies at Sevastopol, 1918, and returned to Turkish Navy. 3300 tons. Complement, 365. Dimensions: 330 × 42 × 17½ feet (*max.* draught). Guns (as re-armed): 4—5.1 inch (Vickers 1914), 4—3 inch 50 cal. (Schneider). Deck, 1". H.P. 12,000 = 22 kts., (much less now). Babcock and Wilcox boilers. Coal: 600 tons. Endurance: 4700 miles at 10 kts. Built by Cramps, Philadelphia. (Now being refitted and reboilered).

TURKEY—Torpedo Craft and S.M.

TORPEDO CRAFT AND SUBMARINES.

3 (+ 2 building) Destroyers (*Torpedo Muhribi*).

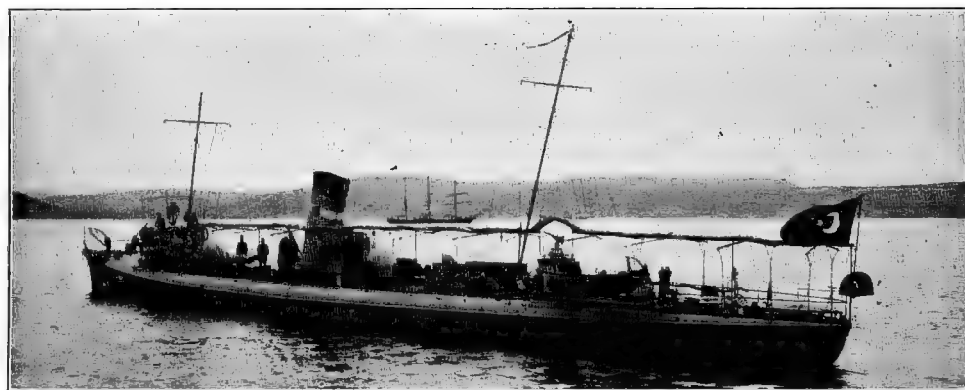
2 *Ansaldo* boats: laid down at Sestri Ponente, 1929. Displacement, 1350 tons (1610 tons full load). Dimensions: 307 × 39½ × 10½ feet. Geared turbines. 3 Thornycroft boilers with super-heaters. S.H.P. 35,000 = 36 kts. Guns: 4—4.7 inch, 2—40 m/m AA., 2—M.G. Tubes: 6—21 inch, in triple deck mountings.



3 French type boats: **Samsoun**, **Basra**, both launched at Bordeaux (1907), and **Tashoz** launched by Creusot, Chalons, (1907). 290 tons. Dimensions: 185 × 21 × 9½ feet. Armament: 2—9 pdr., 6—1 pdr., 2—18 inch tubes. I.H.P. 6000 = 29 kts. Coal: 70 tons. Endurance: 975 miles at 15 kts. Complement, 67. *Tashoz* re-fitted, 1923-24. Other two non-effective pending refit.



1 Torpedo Boat.



1 *Ansaldo* boat: **Moussoul** (1905), 160 tons. Dimensions: 167 × 18 × 4½ feet. Armament: 2—1 pdr., 2—1½ in. tubes. Boilers: Locomotive type (in bad condition). H.P. 2700 = 24 kts. Coal: 60 tons. Complement, 20.

2 (+ 2 building) Submarines.

Building.

1 *Bernardis* type: No. 3 laid down 1929 by Cantiere Navale Triestino, Monfalcone. Displacement $\frac{830}{1050}$ tons. Dimension: 223 × 19 × 14 feet. Machinery: 2 sets Diesels, H.P. 3000 = 17.5 kts. on surface. Electric motors of 1000 H.P. = 9 kts. submerged. Armament: 1—4 inch gun, 6—21 inch tubes.

1 *Bernardis* minelaying type: No. 4, laid down 1929, at same yard. Displacement, 950 tons. Dimensions: × × × feet. Speed: $\frac{12}{17}$ kts. Armament: 1—3 inch gun, 2—21 inch tubes. 48 mines carried.



1927 Photo, R. F. Schelltema, Esq.

2 *Feijenoord* type: **No. 1** (February 1, 1927) **No. 2** (March 12, 1927). (In Turkish, these numbers are rendered as BIRINDJI-IN-UNI and IKINDJI-IN-UNI). Both built by Feijenoord Co., Rotterdam. Displacement $\frac{805}{820}$ tons. Dimensions: 192½ × 19 × 11½ feet. 2 sets M.A.N. Diesels. Speed: $\frac{13.5}{8.5}$ kts. Tubes: 6—17.7 inch (4 bow, 2 stern). Both arrived in Turkish waters in early summer of 1928.

4 Gunboats (*Gambot*).



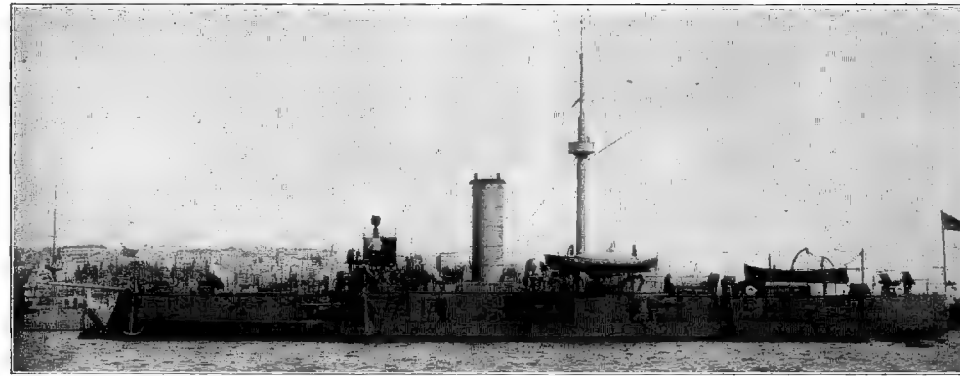
1 *St. Nazaire* type: **AIDAN REIS** (June, 1912), Refitted in 1925. 502 tons. Dimensions: $178\frac{1}{2} \times 27\frac{5}{8} \times 8$ feet. Boilers: Babcock. H.P. 1025 = 14 kts. Guns: 2—3 inch, 2—6 pdr.



3 *La Seyne* type: **KEMAL REIS** (ex *Duruk Reis*, Feb., 1912), **HIZIR REIS** (Feb., 1912) and **ISSA REIS** (Dec., 1911). 413 tons. Dimensions: $154\frac{1}{2} \times 25\frac{3}{4} \times 4\frac{1}{2}$ feet. Guns: 3—3 inch (12 pdr.), 2—3 pdr., 2 M.G. H.P. 850 = 14 kts. Refitted, 1923. The 2 forward 3 inch guns, shown above in sponsons, are now mounted on forecastle.

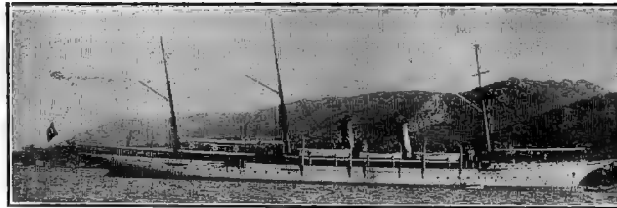
Note.—**HIZIR REIS** is tender to Gunnery School; other two have been lent to Customs service.

Training Ships.



MUIN-I-ZAFFER (1869), Old Central Battery Ironclad. 2263 tons. Training Ship for Boys. Guns: 2—6 pdr. Old Battleship, **TOURGOUT REIS** (described on an earlier page) serves as Training Ship for Cadets.

Yachts.



ERTOGRUL (Armstrong, 1903). 964 tons. Dimensions: $260 (p.p.) \times 27\frac{1}{2} \times 11\frac{1}{2}$ feet. Guns: 8—3 pdr. H.P. 2500 = 21 kts. Machinery: Hawthorn Leslie. Boilers: Cylindrical. To be refitted for use as Presidential Yacht.

SUGUTLU (Armstrong, 1903). 188 tons. Speed: 14 kts. In good condition.

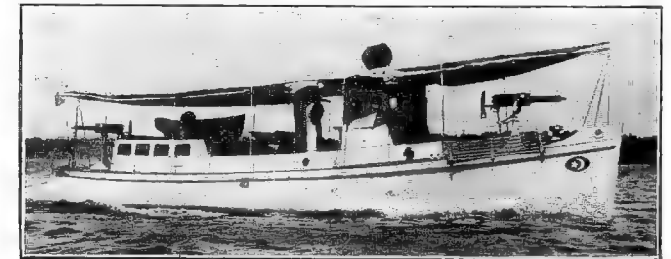
Minelayer.

NUSRET (1912). 365 tons. Dimensions: $132 \times 22 \times 8\frac{1}{2}$ feet. Speed: 15 kts. Can carry 25 mines.

15 Motor Launches.

3 *S.V.A.N.* boats, building at Venice. 32 tons. 34 kts. 2 torpedoes, 1—3 inch gun.

8 New Boats (1926). 25 tons. 4 depth charges carried.



Photo, Messrs. J. I. Thornycroft & Co.

5 boats: Nos. 11, 14, 15, 18, 21. Are Thornycroft type motor patrol boats, built 1911, for customs, police and coastguard duties. Dimensions: $\times \times 2\frac{1}{2}$ feet. Guns: 1 M.G. or 1 small Q.F. 140 H.P. Thornycroft petrol motor = 11 kts. Bullet-proof steel over conning position and engines.

Sea-going Tugs.

(Both fitted for Minelaying during the War.)

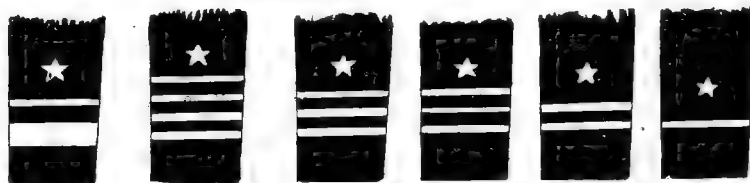
INTIBAH (ex *Warren Hastings*, Port Glasgow, 1886). Iron. 616 tons gross. Dimensions: $202 \times 30 \times 12$ feet. H.P. 1670 = 12 kts. 2 screws.

SELANIK.

Revised from Official Handbook, "Ships' Data, U.S. Naval Vessels," and from information furnished by courtesy of the Navy Department, Washington, D.C., 1929.
(The Navy Department accepts no responsibility whatever for the accuracy of the data as actually published herein.)

UNIFORMS.

As Rear-Admiral, but with two and one extra thin stripes respectively.

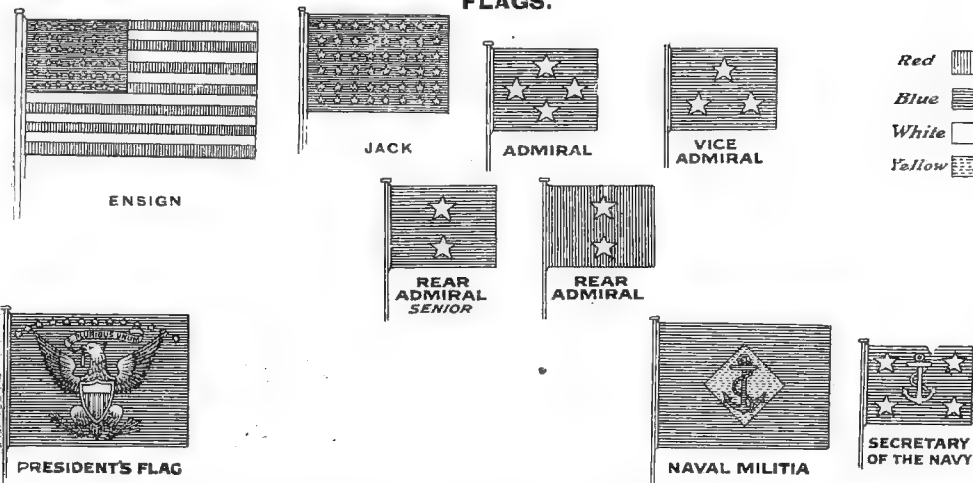


Admiral. Vice-Admiral. Rear-Admiral. Captain. Commander. Lieut-Commander. Lieutenant. Ensign.

The rank of Admiral has been provided for the Chief of Naval operations, Navy Dept., also the ranks of Admiral and Vice-Admiral for certain flag officers afloat.

Note.—Lieutenants, junior grade, have 1½ stripes. Chief Warrant Officers one stripe broken with blue. Line Warrant Officers star without any stripe. Staff Warrant Officers under Chiefs have no sleeve mark. Engineers same as Line Officers (interchangeable). Other branches than executive wear no sleeve star, but have badge of branch over top stripe.

FLAGS.



Senior officer when of or below rank of captain flies a blue triangular flag. Assistant-Secretary of Navy has a flag same as Secretary's with colours reversed, i.e., white ground and blue anchor and stars.
Secretary of the Navy: The Hon. Charles F. Adams.
Assistant Secretary of the Navy: The Hon. Ernest L. Jahncke.
Do. (Aviation): David S. Ingalls.
General Board: Rear-Admiral A. T. Long.
Rear-Admiral R. H. Jackson.
Rear-Admiral H. H. Hough.
Rear-Admiral J. M. Reeves.
Captain W. R. Gherardi.
Commander R. L. Ghormley.
Commander H. C. Train.
Lieut.-Commander E. M. Williams.
Lt.-Col. L. C. Lucas (Ret.), U.S.M.C.
Personnel U.S.N. and Marine Corps: Officers, 7,873.
Men, 105,500.
(Reserves): Officers, 4,256.
Men, 18,179.

Also the following ex-officio members:—Admiral C. F. Hughes (Chief of Naval Operations); Rear-Admiral J. R. P. Pringle (President Naval War College); Captain A. W. Johnson (Director of Naval Intelligence).

Naval Attaché, London: Captain W. W. Galbraith.

Principal Guns in the U. S. Fleet.

(Officially revised, 1929.)

Built at Washington Gun Factory, proved at Indian Head, Dahlgren, Va., and Potomac Range.

Notation	Nominal Calibre.	Mark or Model.	Length in Calibres	Weight of Gun.	Weight of A.P. Shot.	Service Initial Velocity.	Maximum penetration firing capped A.P. direct impact against K.C. armour.			Muzzle Energy.
							9000	6000	3000	
HEAVY	inch.			tons.	lbs.	ft. secs.	in.	in.	in.	ft.-tons.
	16	II	50	130	2100	2800	...	...	...	...
	16	I	45	105	2100	2600	...	...	...	98,531
	14	IV	50	81	1400	2800	...	...	...	76,087
	14	I	45	63½	1400	2600	18	...	...	...
	12	VII	50	56.1	870	2900	11.0	13.9	17.5	50,783
	12	VI	45	53.6	870	2700	10.6	13.3	16.6	44,020
	12	V	45	52.9	870	2700	9.8	12.3	15.5	44,020
	10	III	40	34.6	510	2700	6.9	9.0	11.9	25,772
	8	IX	55	29.7	250	3000	...	...	...	16,240
MEDIUM	8	VI	45	18.7	260	2750	4.4	6.1	8.6	13,630
	8	V	40	18.1	260	2500	4.0	5.3	7.5	11,264
	6	XII	53	10	105	3000	...	...	...	6,551
	6	VIII	50	8.6	105	2800	2.3	3.2	5.2	5,707
	6	VI	50	8.3	105	2600	2.2	2.9	4.7	4,920
	6*	IX	45	7.0	105	2250	2.1	2.5	3.8	3,685
	6*	IV, VII	40	6.0	105	2150	2.1	2.4	3.6	3,365
	5*	VII	51	5.0	50	3150	1.4	1.8	3.4	3,439
	5	VI	50	4.6	50	3000	1.4	1.7	3.2	3,122
	5	V & VI	50	4.6	60	2700	1.6	2.0	3.5	3,032
LIGHT and AA.	5*	II, III, IV	40	3.1	50	2300	1.4	1.7	2.6	1,834
	4*	IX	50	3.0	33	2900	...	...	...	1,926
	4*	VIII	50	2.9	33	2800	1.2	1.5	2.6	1,794
	4*	VII	50	2.6	33	2500	1.2	1.4	2.2	1,430
	4*	III, IV, V, VI	40	1.5	33	2000	...	1.2	1.7	915
	3½	X	50	1.15	13	2700	...	...	...	657
	3	V, VI, S-A	50	1.0	13	2700	...	0.8	1.2	658
	3*	II, III	50	0.9	13	2700	...	0.8	1.2	658

* = Brass cartridge case.

Guns of 1899 and later have Vickers breech, etc. All guns use nitro-cellulose.

§ Anti-aircraft gun.

Navy Estimates: 1929-30, \$366,709,747.

Mercantile Marine.

(Lloyd's Register," 1929, figures.)

Total gross tonnage, including Great Lakes and Philippines, 14,482,022.

NOTES ON ORDNANCE, TORPEDOES. &c.

Gunnery Notes, &c.—U.S.A.

Note.—Starred Paragraphs (***) are official data, furnished to "Fighting Ships" by courtesy of the Navy Department.

I.—Ordnance, &c.

DIRECTORS.—In all Battleships, Newer Light Cruisers and Destroyers. Type of Director : Navy type. Range Clocks on masts and Deflection Scales on gunhouses, as in British Navy.

FIRE CONTROL.—Latest type is self-synchronising electric.

*****RANGE FINDERS.**—Made in various sizes from short 3-foot base range finders for navigation to 30-foot base range finders for use in turrets. Standard practice in U.S. Navy is now to mount one range finder in each turret.

*****HIGH EXPLOSIVES.**—T.N.T. and Explosive "D" are standard high explosives for U.S. Navy.

*****NON-RICOCHET SHELLS.**—Flat-nosed type; does not ricochet from surface when fired at elevation of over 2°. Made in 3 inch, 4 inch, 5 inch and 6 inch sizes for guns of equivalent bores. Delay action fuze commences on impact with water. Use of this shell converts gun into what is practically a long range depth charge thrower, the flat-nosed shell acting as depth charge.

*****STAR SHELLS.**—Range, three to six land miles. Made for 3 inch, 4 inch, 5 inch and 6 inch guns. Time fuze lights lamp and expels parachute and burner through base of shell. Normally, shell detonates at 1000 feet. Burner, 800,000 candle power, burning for 30 seconds, and illuminating sea for one mile diameter.

II.—Torpedoes.

***Torpedoes in U.S. Navy are all turbine-driven. 21 inch is standard size used, though 18 inch still exist in older vessels. (No current official details available of marks, ranges, speeds, charges and types of heater.) Hammond radio-dynamic (distance-controlled) torpedo has been reported under test.

III.—Mines.

***Made in various sizes and of constructions particularly adapted for work they are expected to perform. Anchor similar to British type.

Unofficial Notes.—Mk. VI anti-submarine type of mine is reported to weigh 1400 lbs and to have 300 lbs. T.N.T. charge. Body of mine, spherical, 3 feet diameter. Form of detonation uncertain; said to consist of antennae fitted with the Earle Patent Magnetic Pistol. Sinker is box-shaped and has wheels to gauge of laying ship's mine-discharging rails. Mine and sinker float together immediately after laying, while a 90 lb. plummet (attached to $\frac{1}{2}$ inch steel wire) sinks. The "plummet cord" is measured off to same depth at which mine is to float below surface. When plummet cord is spun full out, latch is unlocked and mine and sinker separate. Mine still floats on surface, while mine-mooring cable begins to spin off drum and sinker descends. Immediately the plummet touches bottom, the running-out of mine-mooring cable is stopped and cable is locked. Sinker (or anchor) then comes down to bottom, drawing down the mine to the desired depth below the surface. Soluble safety plug used. Antennae said to consist of thin conducting wires and magnetic pistols, floating out in a star pattern all round body of mine and giving a contact diameter of 50 feet. Has been found effective against large surface ships. Being light and easily handled, it has been adopted for laying by Light Minelayers.

IV.—Aircraft Bombs.

- ****(a)* 18 lb. Explosive charge, T.N.T.
- (b)* 25 lb. Explosive charge, T.N.T.
- (c)* 158 lb.* Explosive charge, T.N.T.
- (d)* 214 lb.* Explosive charge, T.N.T.
- (e)* 230 lb. (British design).* Explosive charge, Amatol.
- (f)* 266 lb.* Explosive charge, T.N.T.
- (g)* 500 lb. Explosive charge, T.N.T.
- (h)* 1000 lb. Explosive charge, T.N.T.

Note.—Types marked * for Anti-Submarine use.

V.—Anti-Submarine.

*****DEPTH CHARGES.**—Mk. IV.—Charge 600 lbs. of T.N.T. Dimensions : 24 inch diameter, 28 inches long. 100 feet effective radius, hydrostatic firing valve, similar to Mk. II and III Depth Charges.

***Depth Charge, Mk. II and III. Charge : 300 lbs. of T.N.T. Dimensions : 18 inch diameter, 28 inches long. Effective within a radius of 70 feet from point of detonation. Limit of detonation adjustable between 36 and 300 feet. Safety device prevents detonation due to gun blast, etc., detonation above six fathoms, or when thrown overboard with firing device in the off position. Detonation by hydrostatic pressure only. During War, destroyers carried from 30 to 50 depth charges and vessels on submarine patrols up to 100 depth charges.

*****Y-GUN OR DEPTH CHARGE PROJECTOR.**—Two barrels set at an angle of 90°, each barrel 3 feet long and 6 inch bore. 300 lb. depth charges fastened to arbors, inserted in barrels of Y and common powder charge exploded at junction of barrels; range of about 30 yards obtained.

HYDROPHONES.—K-tube fish type, 30 miles acoustic radius, but operating vessel must stop engines and auxiliaries while listening. SC- and MB-tube types, 3 miles acoustic radius; built into hull and insulated against noise; can be used without stopping ship.

(Also v. Non-Ricochet Shells; Aircraft Bombs, Sweeping Gear.)

VI.—Sweeping Gear.

PV's as British Navy of H.S.S.S. and H.S.M.S. types, but with slight modification of inhaul gear. Methods of attachment also same as British Navy.

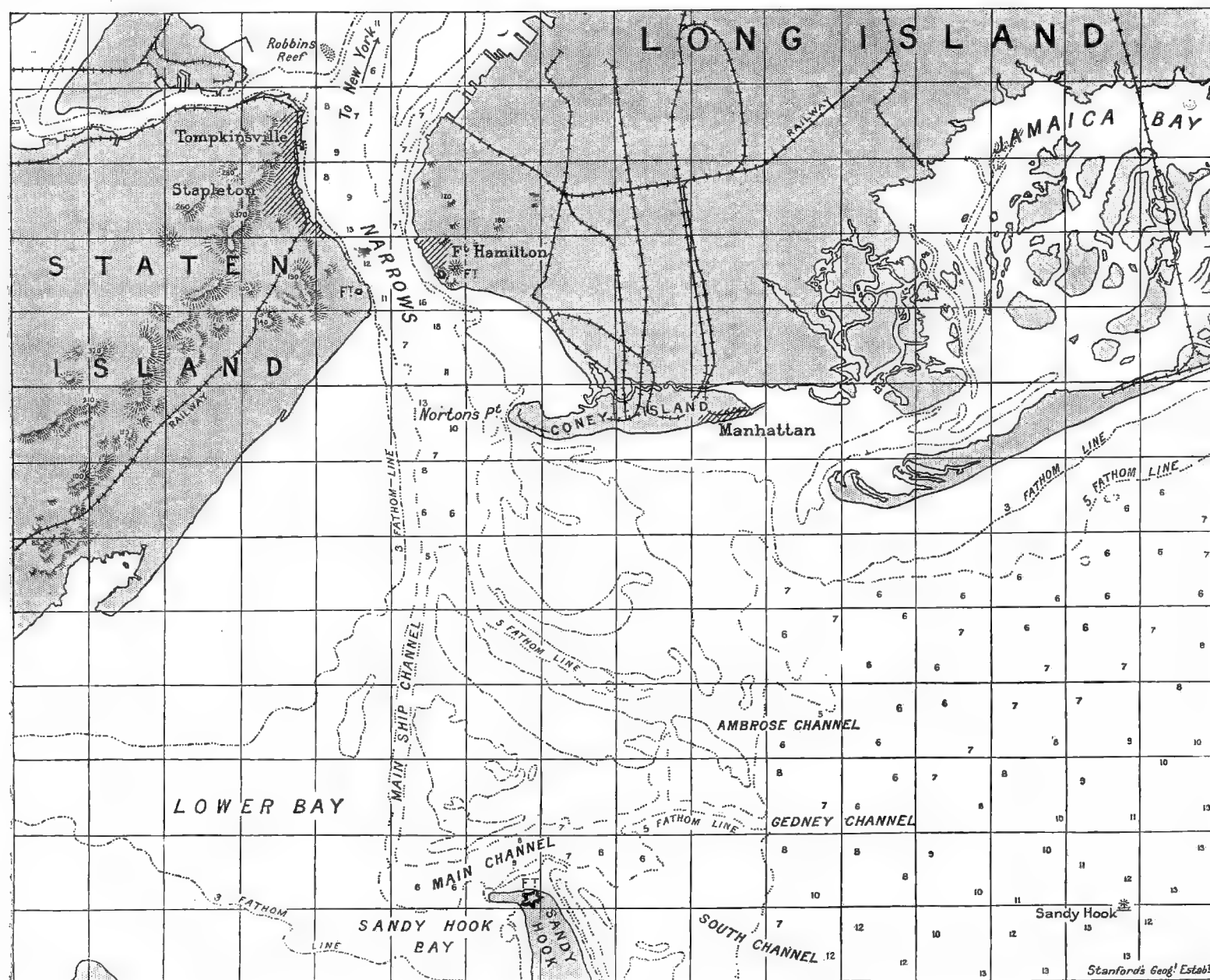
VII.—Searchlights.

No details known, but in latest ships are of controlled type, as in British Navy. Battleships of later types carry 8 per ship; those of older types, prior to *California*, only have 4 per ship.

VIII.—General.

All battleships carry 3 'planes and one or two catapults; in most ships, latter are of new explosive type. Battleships *New York*, *Texas*, *Wyoming*, *Arkansas*, *Florida* and *Utah* have been fitted with bulges, and have had deck armouring extended. They have also been converted to oil-burning.

Similar alterations are being effected to *Oklahoma*, *Nevada*, *Pennsylvania* and *Arizona*.

**General Summary.**

10 Navy Yards undertaking construction and repair work:

Boston, Mass.	Pearl Harbour, Hawaii.
Brooklyn, N.Y.	Philadelphia, Pa.
Charleston, S.C.	Portsmouth, N.H.
Mare Island, Cal.	Puget Sound, Wash.
Norfolk, Va.	Washington, D C

11 Naval Stations.

Balboa, C.Z.	New Orleans, La.
Cavite, P.I.	Newport, R.I.
Guam.	Pensacola, Fla.
Guantanamo, Cuba.	St. Thomas, W.I.
Key West, Fla.	Tutuila, Samoa.
New London, Conn.	

4 Naval Training Stations.

Great Lakes, Ill.	Newport, R.I.
Hampton Roads, Va.	San Diego, Cal.

Navy Yards.

BROOKLYN (NEW YORK).—3rd Naval District. Depôt and shipbuilding yard. Slip No. 1 re-built and Slip No. 2 are both suitable for building largest types of Battleships. New plant also installed, workshops re-arranged and renovated, new offices and general stores built and magazine stores greatly enlarged, 1917-18.

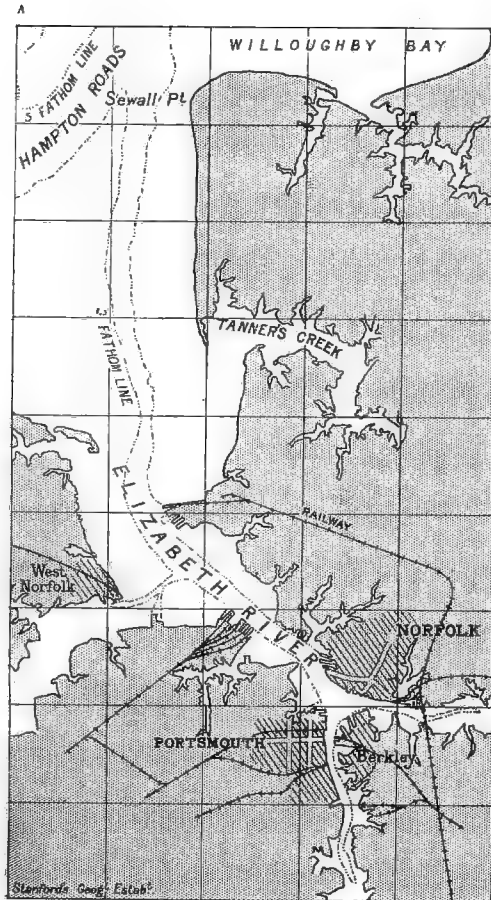
Dry docks:

- (1) granite, 330 × 66 × 25 feet.
- (2) concrete, 440 × 90 × 26 feet.
- (3) wood 613 × 105½ × 29½ feet.
- (4) granite and concrete, 700 × 120 × 35 feet.

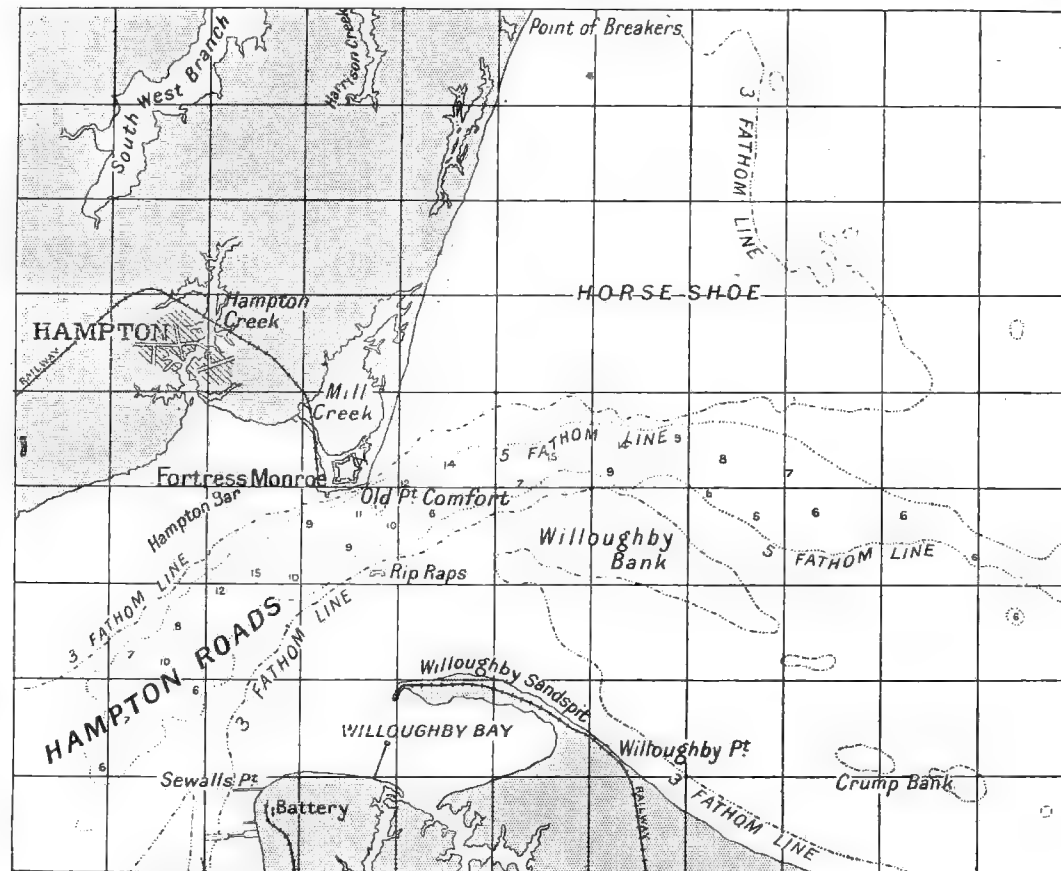
Naval hospital here. Admiralty Chart No. 3204, 2491. Rise of Spring Tide, 4½ feet.

Note.—Private docks: Altogether there are nearly 100 privately owned docks in the neighbourhood of New York and adjoining districts, the majority being floating docks or patent slips. The Morse Dry Dock & Repair Co. have a dock capable of taking a ship of 30,000 tons and 725 feet in length, and there are 11 others of 10,000 tons capacity or over.

Note to Chart.—This shows approaches to Navy Yard which is situated higher up, in the direction of the arrow pointing "to New York."



NORFOLK, VA.—5th Naval District. This is the dockyard section of the Hampton Roads Naval Training Station. Depot and ship-building yard. Naval hospital here. One or more slips for building Battleships. (1) Wood dock, $460 \times 85 \times 25\frac{1}{2}$ feet; (2) granite, $303 \times 60 \times 25\frac{1}{2}$ feet; (3) granite dock, $713 \times 97 \times 34$ feet; (4) concrete dock, $1000 \times 110 \times 43\frac{1}{2}$ feet, divisible into 2 sections, about 650 and 350 feet long; has electric towing gear, 50-ton electric crane, and hydraulic lifts for rapid handling of repair materials, etc. Capable of being emptied in 30 mins.; floating pontoon crane 150 tons, and auxiliary 25 tons on hoist. (5) and (6) two concrete docks, each $455 \times 62 \times 20$ feet. In 1917, new foundry, workshops, and plant for making mines installed and old plant renovated. Three patent slips here, each 1500 tons. Admiralty Chart No. 2818, 2843a.



(Norfolk chart on left joins here.)

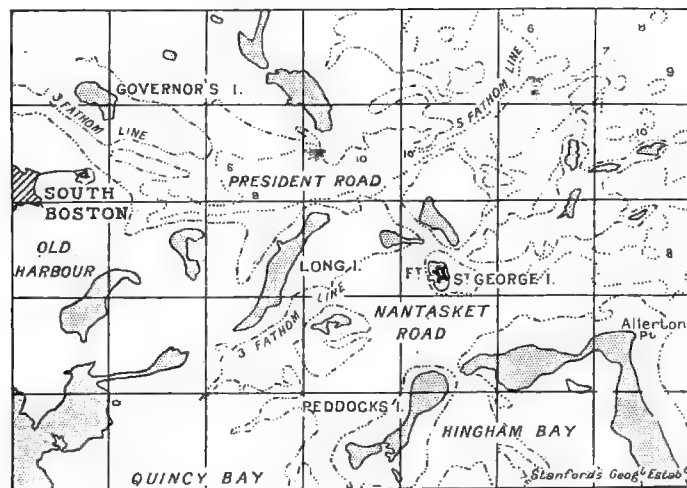
(HAMPTON ROADS AS ABOVE MAP.)

Note to Norfolk Chart.—Navy Yard is situated on left bank of Elizabeth River, opposite Berkley.

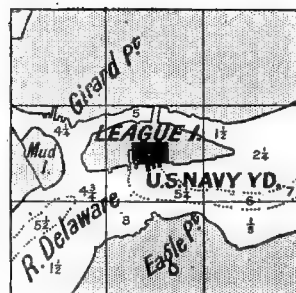
HAMPTON ROADS NAVAL TRAINING STATION (continuation to N. and N.W. of Norfolk Chart).—5th Naval District. Site on ground of Jamestown Exposition was purchased here in 1917, where it is intended that eventually, in conjunction with the Norfolk N.Y., a Naval Base shall be established which will eventually become the principal warship port on the Atlantic coast. Plans as laid down during 1917 by the Navy Department, contemplated the following works: Submarine and Aviation Bases; Training Station for 10,000 men; Fuel Station (for coal and oil); Depôts for fleet stores, mines, torpedoes and anti-submarine nets, etc.

U.S.A.—Navy Yards—Atlantic.

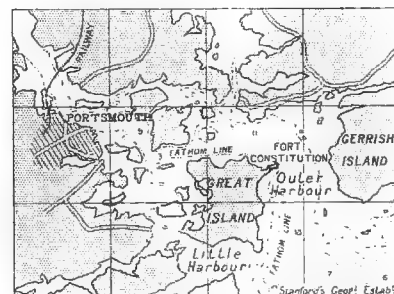
U. S. NAVY YARDS, STATIONS, ETC.—ATLANTIC.



Admiralty Chart No. 1227,2482. Rise of Spring Tide, 5 feet. This only shows approaches to Charlestown Naval Yard.



LEAGUE ISLAND.
Admiralty Chart No. 2564.



PORTSMOUTH N.H.
Admiralty Chart No. 2482,2487.
Rise of Spring Tide, 8½ feet.

Navy Yards (ATLANTIC COAST).

BOSTON, MASS.—1st Naval District. Navy Yard and Depôt. One granite dock, 389 × 46 × 26 feet; one granite and concrete dock, 729 × 101½ × 30½ feet. Commonwealth Dock (completed 1920), concrete, granite and rock, 1171 × 120 × 46 feet, divisible into 635 feet (inner) and 490 feet (outer) sections. Naval hospital here. Also two wooden private docks and four patent slips 1000—2300 tons.

LEAGUE ISLAND, PHILADELPHIA PA.—4th Naval District. Depôt. Slips Nos. 2 and 3 can build Battleships. New workshops, foundry and Marine Barracks, 1917-13. One wooden dock, 420 × 89 × 25½ feet; second dock, granite and concrete, 680 × 95 × 30 feet. New dock, 1005 × 114 × 43½ feet, divisible into two sections, viz., 675 feet outer section and 330 feet inner section. Pier 1000 feet long, with 350-ton crane. Aircraft base and flying ground; also Government seaplane factory. Naval hospital here.

WASHINGTON. No docks. Yard at present is devoted to ordnance construction. Naval hospital here.

PORTSMOUTH, N.H.—1st Naval District. One granite and concrete, 720 × 101½ × 30½ feet. Naval hospital here. This yard specialises in submarine construction.

CHARLESTON, S.C.—6th Naval District. 2nd class Navy yard. Dry dock, 503 × 113 × 34½ feet. 2000-ton patent slip finished 1920. Also a private floating dock (1919-20), 440 × 88 × 22½ feet (10,500 tons).

Naval Stations, &c.

ANNAPOLIS. Naval Academy.

NARRAGANSET BAY, R.I.

NEWPORT, R.I.—2nd Naval District. Chief torpedo station. Manufactory of torpedoes, etc. Naval war college and apprentice-training station. Naval hospital and oil depôt.

CAPE MAY, N.J.—4th Naval District. Base for Submarines and Navy Airships. 349 acres bought 1919 for developing this Station.

NEW LONDON, CONN.—2nd Naval District. Submarine Training Station.

NORTH CHICAGO. Training Station for Great Lakes.

ALEXANDRIA (Va.). U.S. Navy Torpedo Storage Depôt.

Note.—Charleston, Norfolk, and Bradford, R.I., are stations for petrol and oil fuel.

PRIVATE DOCKS, &c.

(Exclusive of those in New York and Brooklyn districts.)

NEW LONDON (CONN.), three patent slips, 1000—2000 tons. **PHILADELPHIA,** one floating dock (3500 tons) and two patent slips (1000 and 2300 tons). **CAMDEN (N.J.),** three patent slips, 1200—1500 tons. **BALTIMORE (Md.),** Wm. Skinner & Sons dry dock, 600 × 80 × 22½ feet. **Columbian Ironworks Dock** (wood), 437 × 80 × 21 feet. **Maryland Steel Co., Sparrow Point,** wood and steel floating dock, 20,000 tons. Also one 3000-ton floating dock and two patent slips (2000 and 1500 tons). At **Portland (Me.), Savannah (Ga.), Jacksonville (Fla.),** small patent slips of 1200 tons (Jacksonville, one 4500 ton floating dock).

U. S. NAVY YARDS, STATIONS, &c.—GULF COAST, CARIBBEAN, &c.

Navy Yards—Gulf Coast, Caribbean—U.S.A.



SAN JUAN, PUERTO RICO.

Admiralty Chart No. 478,3408. Rise of Spring Tide, 1 foot.

NEW ORLEANS, LA.—8th Naval District. Floating dock, 525×100×28½ feet (18,000 tons).

PENSACOLA, FLA.—8th Naval District. 2nd class yard. 8th Naval District. Big Aviation Training Station for seaplanes, dirigibles, kite-balloons, &c. Floating dock, 450×82×27 feet (12,000 tons), ordered by Shipping Board to be stationed here, when ready.

KEY WEST.—7th Naval District. No docks. Submarine and Aircraft Station.

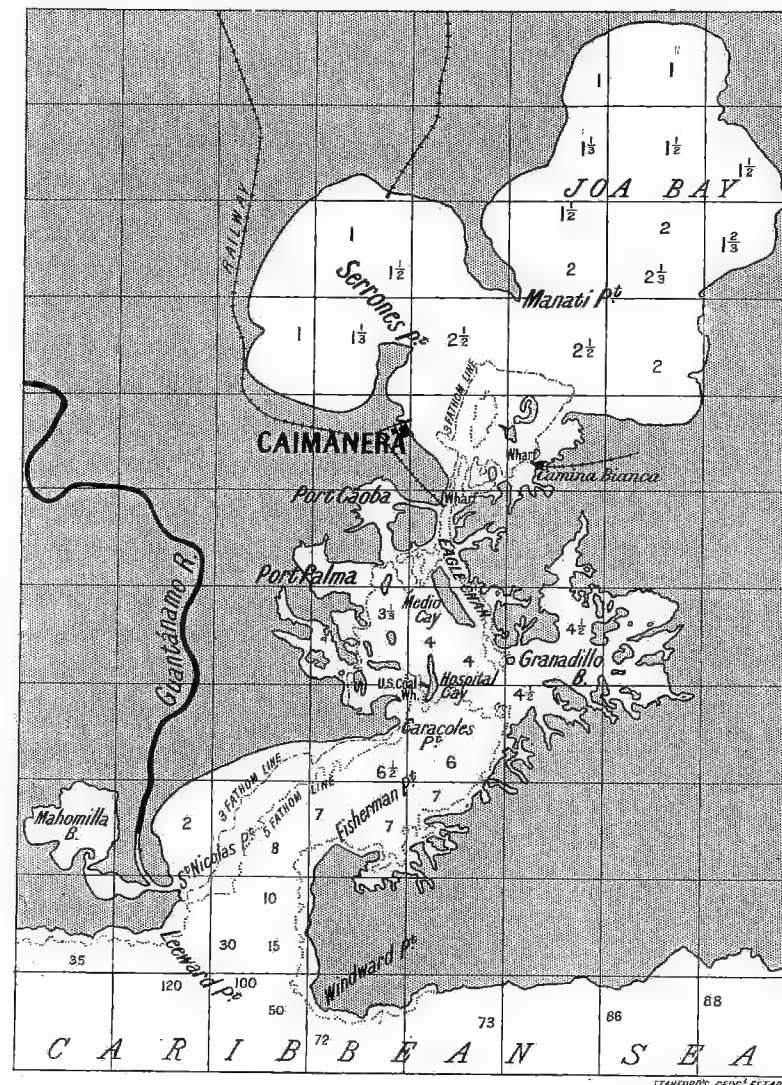
Small Naval Stations also exist at San Juan (Porto Rico) and St. Thomas (Virgin Islands).

Principal Private Docks.

NEW ORLEANS: Two floating docks, 10,000 and 8000 tons, and 3 smaller.

MOBILE (ALA.): Two floating docks, 10,000 and 9000 tons, and several smaller.

GALVESTON: Floating dock, 10,000 tons.



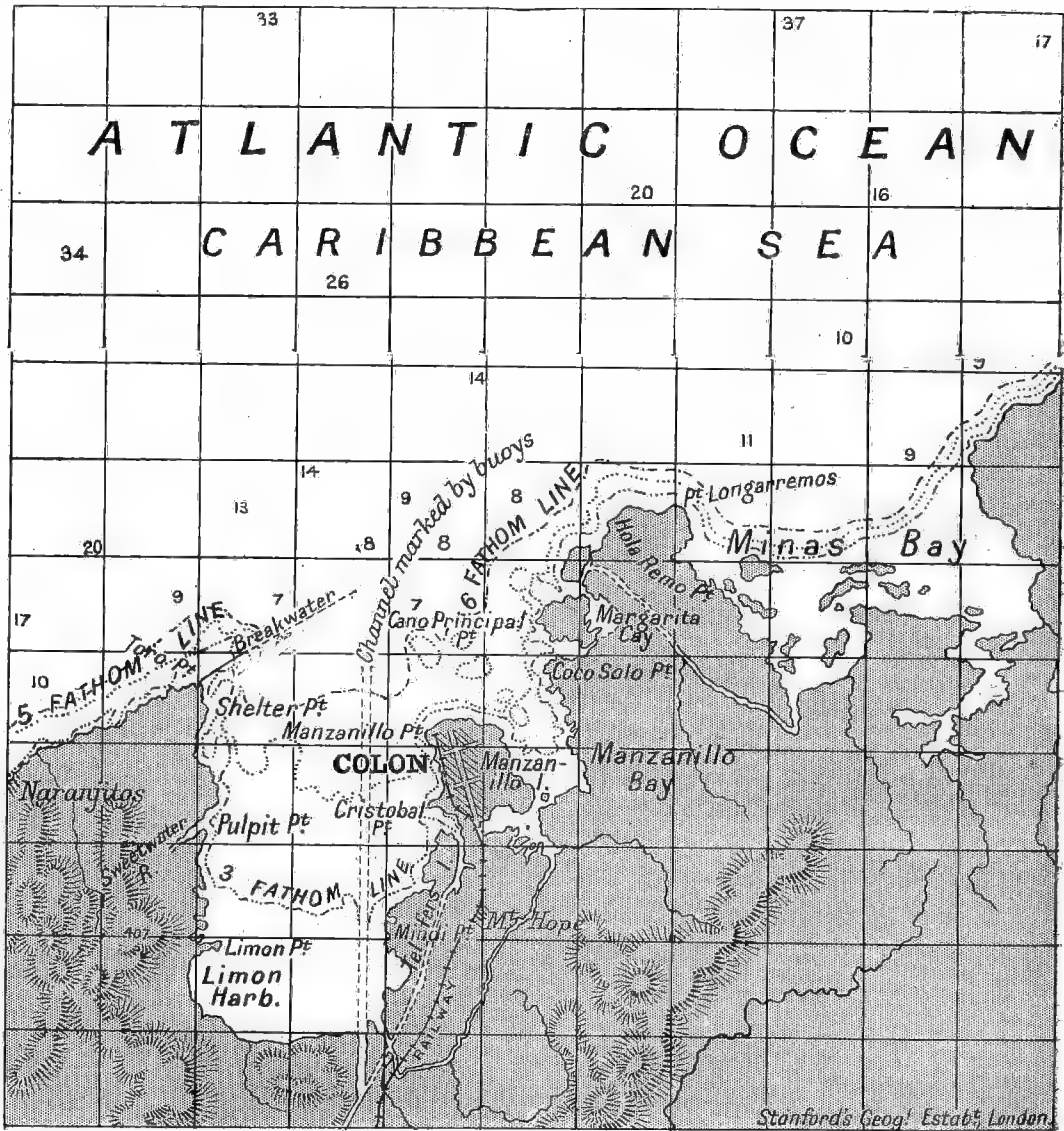
GUANTANAMO BAY (CUBA), leased from Cuban Government. Fleet Anchorage and Exercising Grounds. Small repairs undertaken here. Fuel Depôt. Admiralty Chart No. 904.

U. S. NAVAL STATIONS—PANAMA CANAL ZONE.

Canal about 50 miles long. Channel 300–1000 feet wide at bottom; depth 41–85 feet. Time of passage about 10 hours.



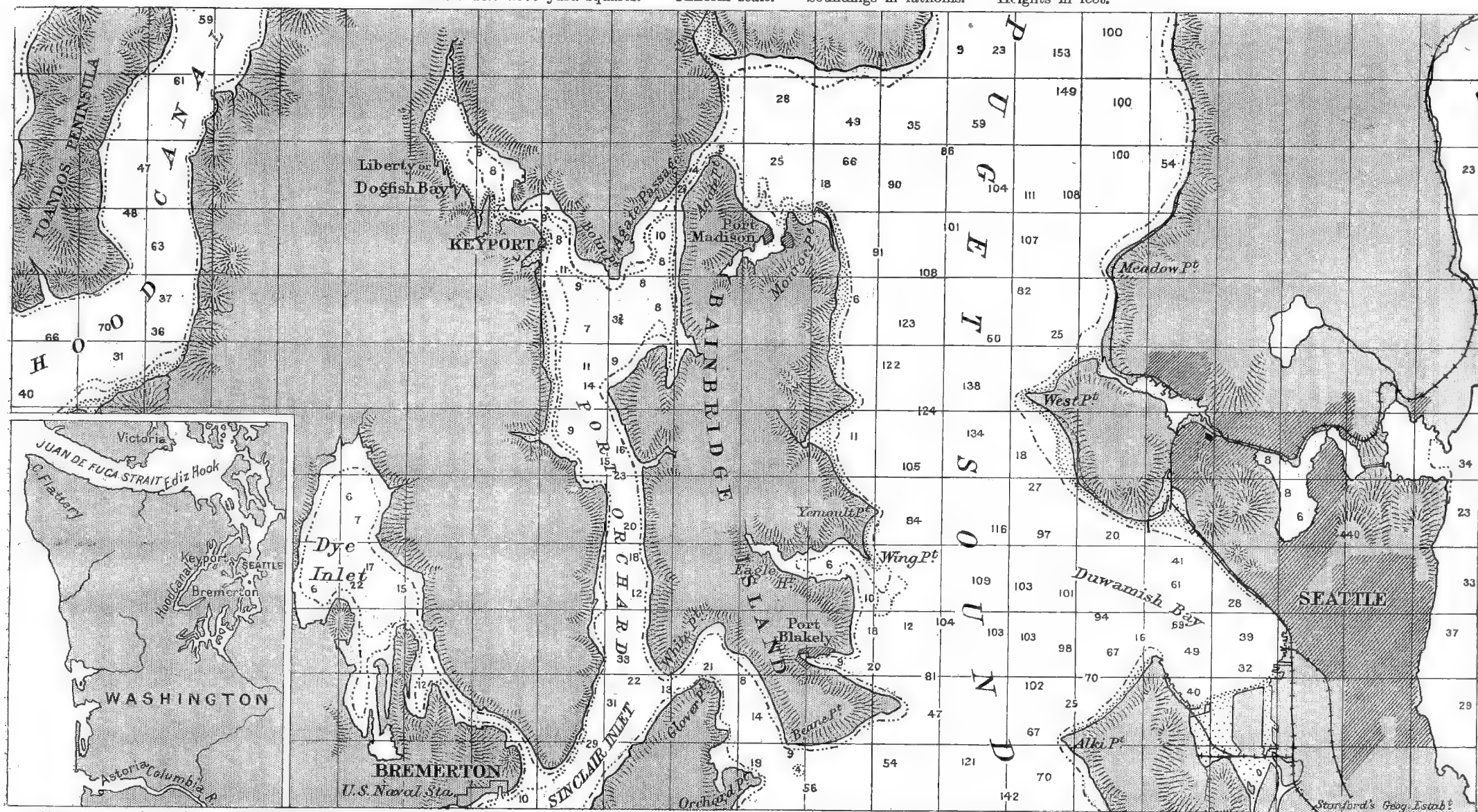
PACIFIC ENTRANCE TO PANAMA CANAL. Heavily fortified. Terminal Graving Dock, No. 1, Balboa. 1000×110×41½ feet. Also fuel depôt for 300,000 to 350,000 tons of coal at Balboa. 2—250 ton floating cranes. U.S. warships are stationed in the Canal Zone, where facilities exist for repairing ships.



ATLANTIC ENTRANCE TO PANAMA CANAL. Heavily fortified. Dock and Fuel Depôt at Cristobal same size as Balboa (see opposite). In the Canal, Gatun, San Miguel and Miraflores Locks (over 1000×110×41½ feet) can be used as docks. Submarine Base at Coco Solo Point.

U. S. NAVY YARDS AND STATIONS—PACIFIC.
 Divided into 2000 yard squares. Uniform scale. Soundings in fathoms. Heights in feet.

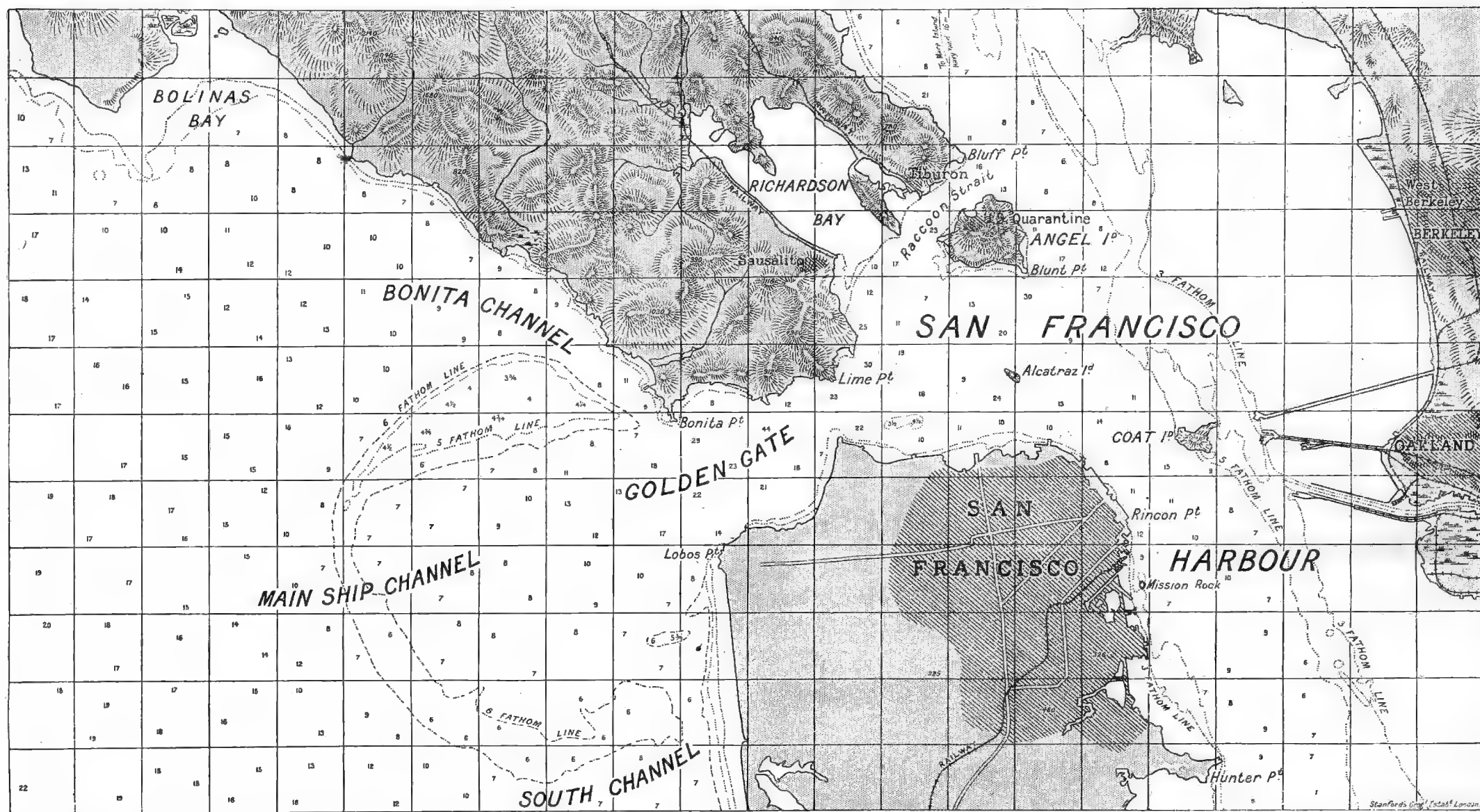
Navy Yards and Stations—Pacific—U.S.A.



Sketch map of district.

BREMERTON, PUGET SOUND.—13th Naval District. Navy Yard and Station. For Ediz Hook and Keyport in this vicinity, v. Naval Stations on a later page. Slips for building Scout Cruisers or Auxiliaries begun here during 1917. Dry docks : (1) Wood, $618 \times 73 \times 27\frac{1}{2}$ feet ; (2) Granite and concrete, $801\frac{1}{2} \times 113 \times 35\frac{1}{2}$ feet ; (3) Concrete, $927\frac{1}{2} \times 124 \times 23\frac{1}{2}$ feet. Two slips, 440×48 feet. Recommended that the yard, &c., be developed into a 1st class Fleet Base, with two 1000 feet and two 472 feet graving docks, &c., at a cost of 44 million dollars.

Divided into 2000 yard squares. Uniform scale. Soundings in fathoms. Heights in feet.



SAN FRANCISCO FLEET OPERATING BASE.—Site secured by free gift at ALAMEDA, within Bay and opposite Hunters Point. No details available, but cost estimated at fifty million dollars. No work begun yet. Recommended that South, Bonita and Main Ship Channels be dredged and protected by breakwaters to allow safe and rapid passage of Battle Squadrons (comprising ships 1000 feet long and drawing 40 feet) at all states of tides.

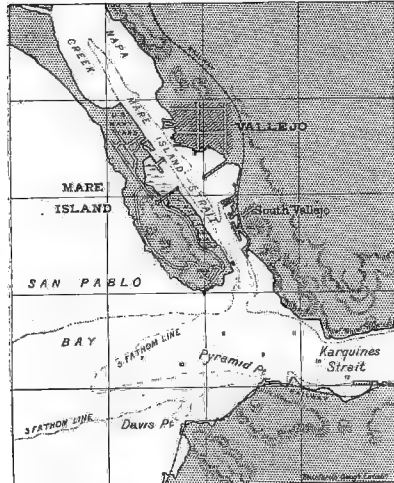
U. S. NAVY YARDS AND STATIONS—PACIFIC.

Navy Yards—Pacific—U.S.A.

Charts to Uniform Scale. Divided into 2000 yards square. Soundings in fathoms.

MARE ISLAND.—12th Naval District. Depôt and Navy Yard (22 miles N. of San Francisco). Slip to build Battleships of 600 feet length, or above. Destroyers also built.

Dry Docks : (1) Granite.....418×88×27½ feet.
(2) Concrete683×102×31½ „



LAS ANIMAS, Colorado. Naval Hospital. There is also a very large Central Naval Hospital at San Diego.

SAN DIEGO, Cal. Marine Barracks, Naval Station, Fuel Depôt, Repair and Training Stations. Is Supply, Repair and Fuel Base for torpedo boat destroyers and submarines. North Island Air Station (1200 acres) is jointly used by U.S. Navy and Army Air Services. Very large projects, involving an outlay of 30½ million dollars have been prepared, to convert San Diego into a Fleet Operating Base, Fleet, Fuel, Supply and Repair Station, but no credits have been secured for this work.

MARE ISLAND. Admiralty Chart No. 2887.
(For Docks, see previous page.)

Minor Naval Stations.—PACIFIC.

EDIZ HOOK (or FALSE NESS). Recommended that a Naval Station be created here, to operate 18 torpedo boat destroyers and 12 submarines in peace time and double these numbers in war. Also Naval Air Station for coastal airships, K.B., flying-boats, seaplanes, aeroplanes also recommended. Credits for commencing work not yet secured.

***KEYPORT** (Bainbridge Island, Puget Sound). Sub-Base to Bremerton Navy Yard. Torpedo station.

ASTORIA (Columbia River, Oregon). At Tongue Point, establishment of Naval Station for 12 submarines and 8 torpedo destroyers (double these numbers for war time) and aircraft recommended. Also anchorage recommended for 8 Battleships. No work begun yet.

*For Keyport, see Bremerton Chart on an earlier page.

Private Shipyards.—PACIFIC COAST. (Warship Builders only.)

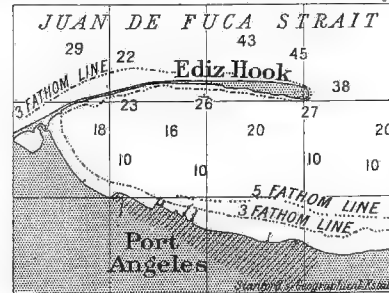
Bethlehem Union Plant.

BETHLEHEM UNION PLANT (SAN FRANCISCO). 38 acres. Two dry docks (Hunters Point) : (1) 716×86×29 feet (28,000 tons), (2) 1000×110×40 feet. Three small floating docks of 2500 and 1800 tons and two of 12,000 tons. Six slips of 600 feet long, fully equipped with electric cranes, etc., and 4 smaller. Five wharves 585×50 feet, berthing for 15 average sized vessels. One sheer leg 100 tons, one 40 tons. 2 marine railways. All plant dates from 1910 or later. Employees : Average 2300. Enlarged 1917. Also yard for mercantile construction at Alameda.

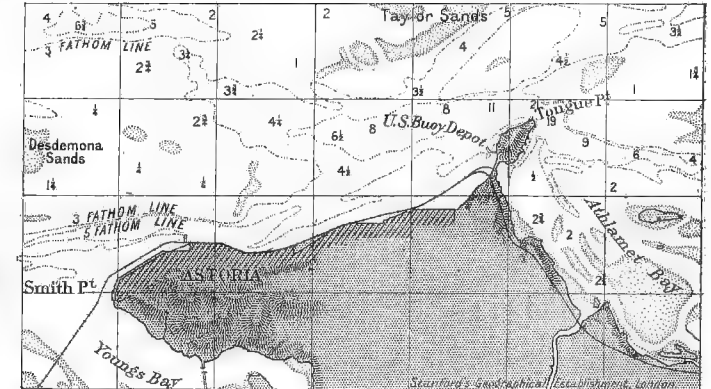
Todd Shipyards Corporation.

SEATTLE YARDS. Floating dock, (1) 521×98½×30 feet, for 15,000 tons; (2) 468×85×27½ feet (12,000 tons); (3) floating dock for 2500 tons; one patent slip, 3000 tons.

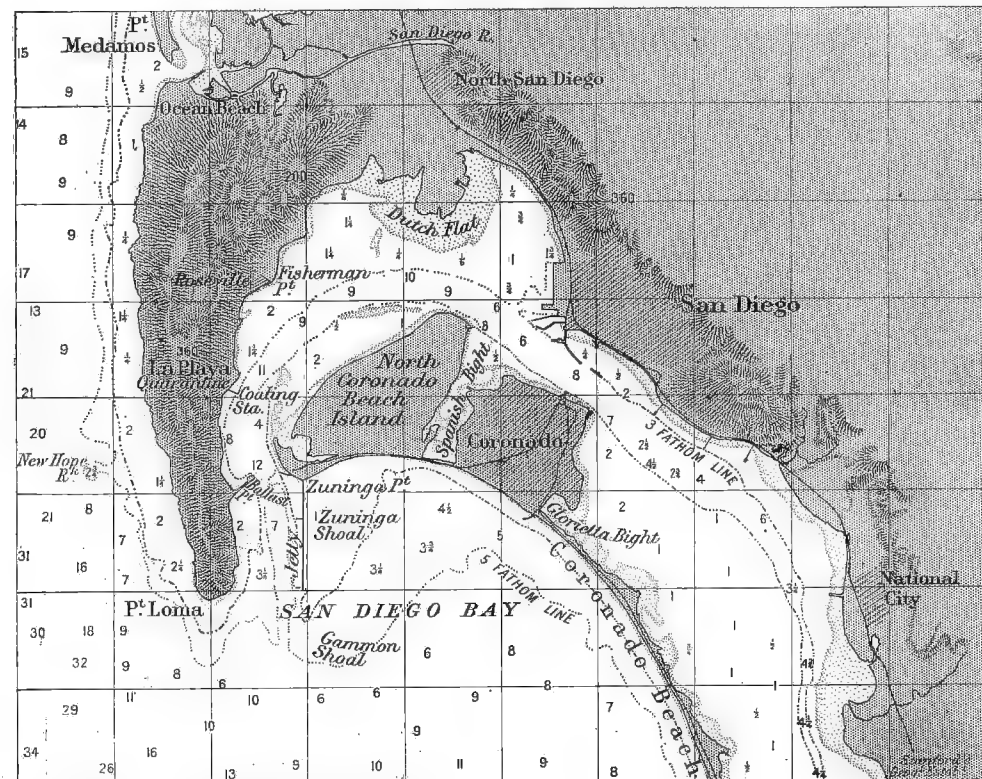
TACOMA YARD. No details available. Cruisers built here.



EDIZ HOOK.
Admiralty Chart No. 1717.



ASTORIA. Admiralty Chart No. 2839.



SAN DIEGO. Admiralty Chart No. 2885

Charts to Uniform scale. Divided into 2000 yard squares. Soundings in fathoms. Heights in feet.

Naval Stations.—2ND CLASS, PACIFIC.

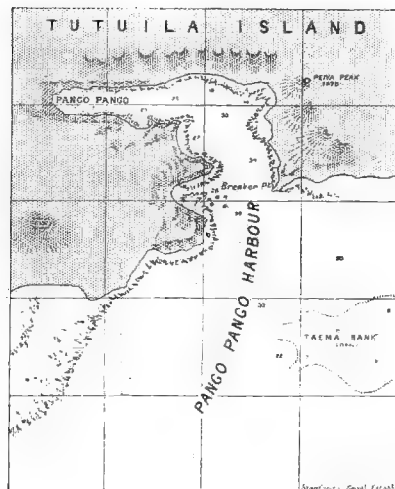
PEARL HARBOUR. (1) Honolulu. (2) Pearl Harbour, on S. side of Island of Oahu, about 10–15 miles west of Honolulu. Fine anchorage, with deep water right up to quays, though approaches are somewhat difficult. Repair facilities limited at present. Large dock here, 1001×114×34½ feet. Recommended that Pearl Harbour be developed into a 1st Class Fleet and Submarine Base, with extra dry docks and extended fuel and fleet stores, and that entrance channel shall be deepened to 45 feet, present minimum being 32 feet. Credits not secured for this work.

TUTUILA (SAMOA). Excellent deep water anchorage at Pago-Pago.

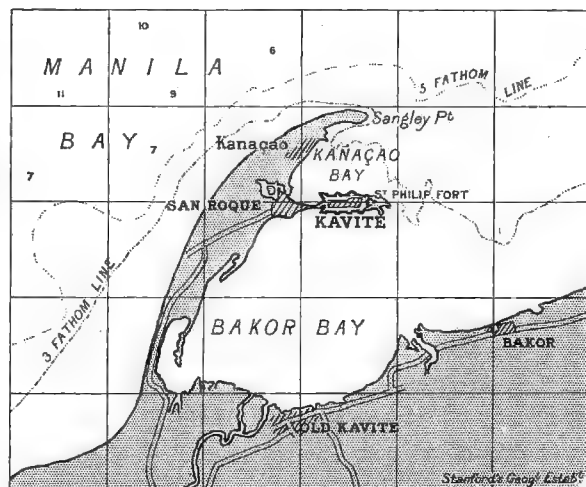
Asiatic Naval Stations.

CAVITE (P.I.) Base for Asiatic Fleet. No docks, and defences in need of improvement. Recommended that a first class base should be established here, to supersede Olongapo. Small dry dock at Manila. Map of entrance to Manila Bay in next column.

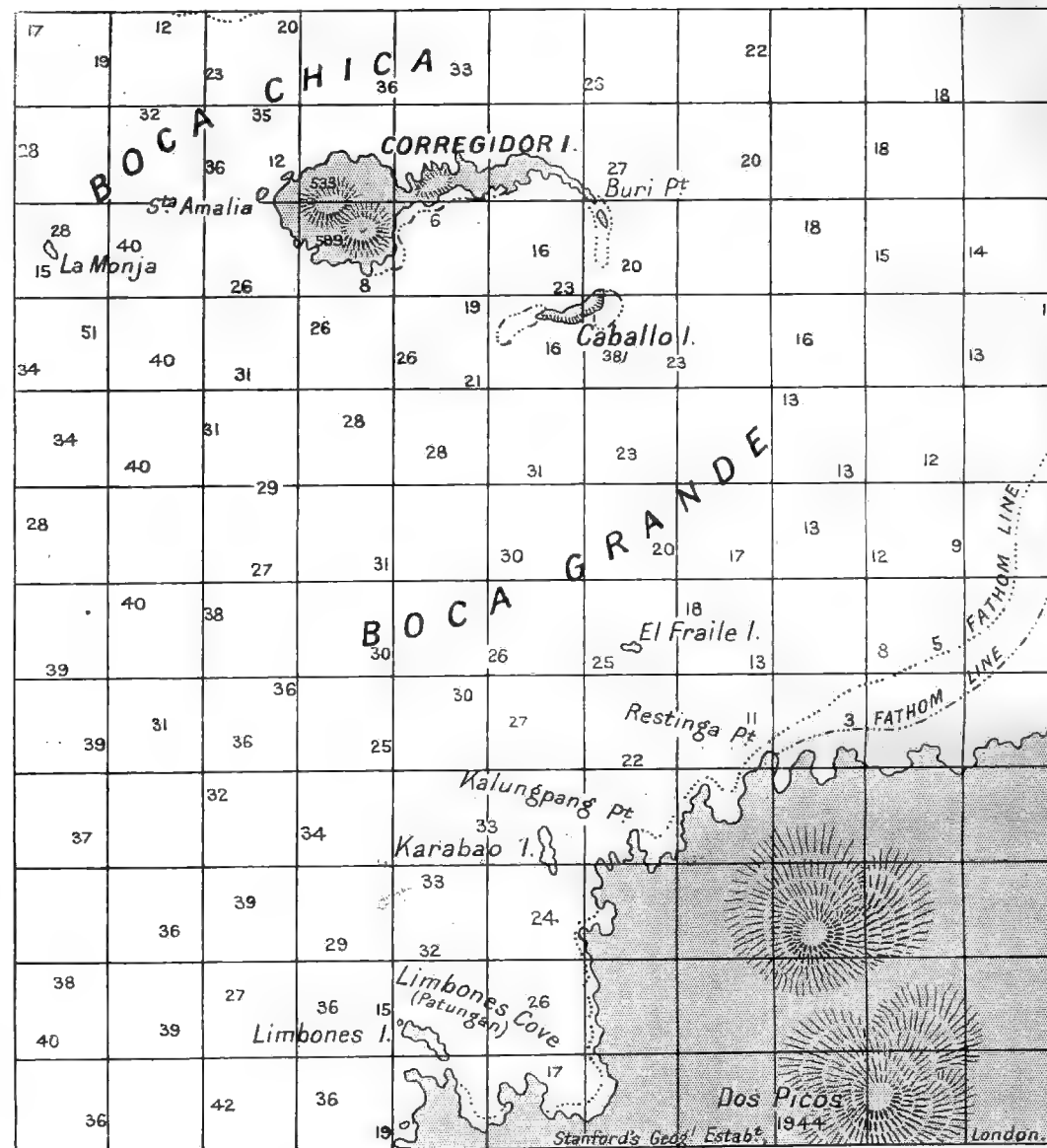
OLONGAPO (P.I.) Dewey Floating dock, 18,500 tons, 501' 0¾" × 100' × 37' 0".



TUTUILA (SAMOA).
Admiralty Chart No. 1730.



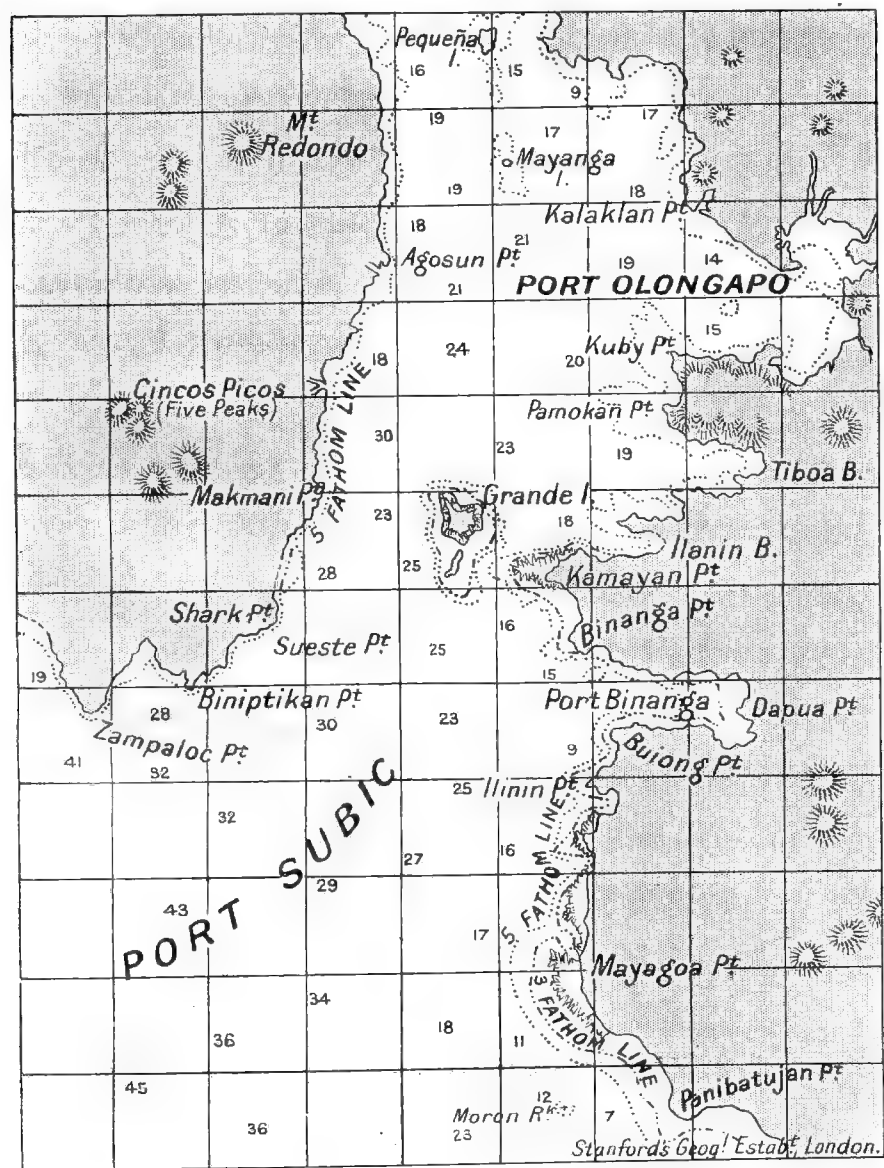
CAVITE P.I. (Asiatic Station).
Admiralty Chart No. 975,976.



ENTRANCE TO MANILA BAY. (Asiatic Station.)

(Continued on next page.)

Divided into 2000 yard squares. Uniform scale. Soundings in fathoms. Heights in feet.



OLONGAPO & PORT SUBIC.



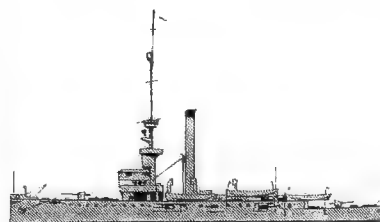
S.C. boats.



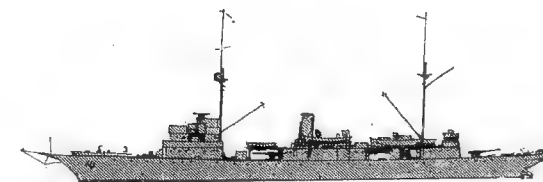
BIRD class.
(Mine Sweepers.)



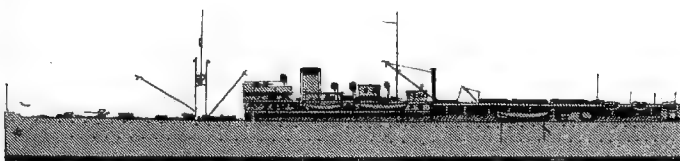
EAGLE boats.



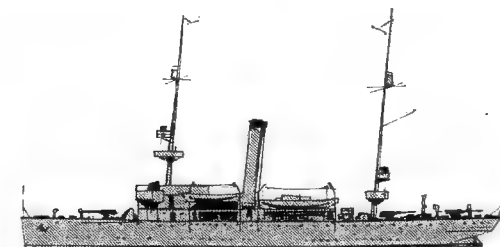
HELENA. (Patrol Vessel.)



BUSHNELL. (S/m. Tender.)



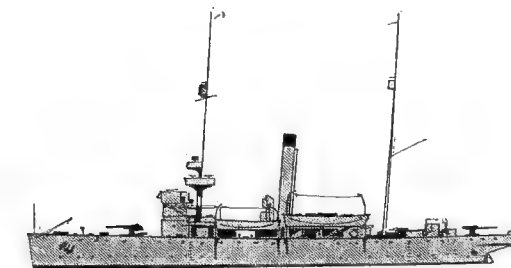
WRIGHT. (Aircraft Tender.)



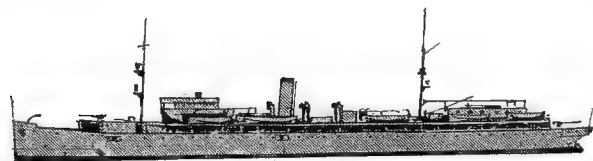
ASHEVILLE. TULSA. (Patrol Vessels.)



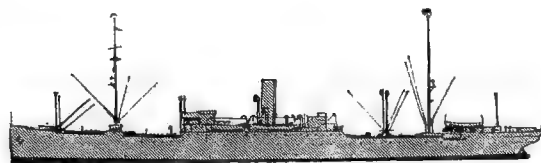
LANGLEY. (Aircraft Carrier.)



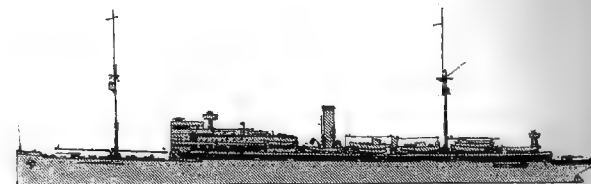
SACRAMENTO. (Patrol Vessel.)



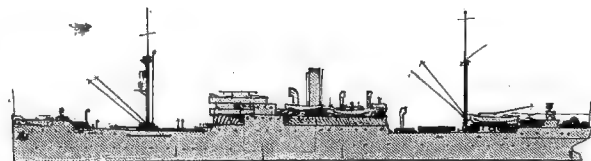
BEAVER.
(*Stm. Tender.*)



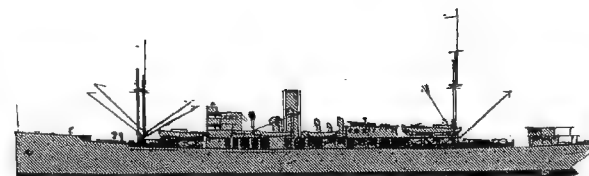
RAPPAHANNOCK.
(*Store Ship.*)



WHITNEY. DOBBIN.
(*Destroyer Tenders.*)



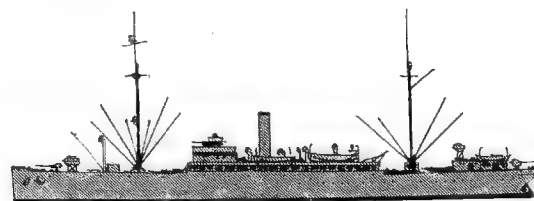
CAPELLA. VEGA. PROCYON.
SIRIUS. REGULUS. GOLD STAR.
SPICA. ANTARES. (*Cargo Ships, etc.*)



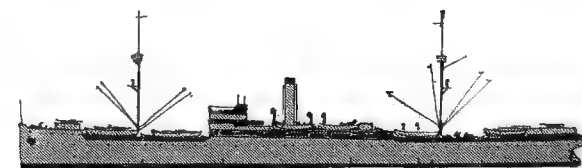
ALTAIR. DENEbola. RIGEL.
(*Destroyer Tenders.*)



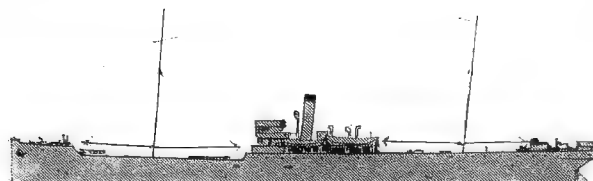
MELVILLE.
(*Destroyer Tender.*)



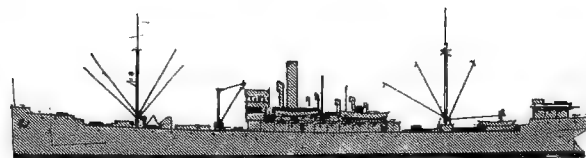
BRIDGE.
(*Store Ship.*)



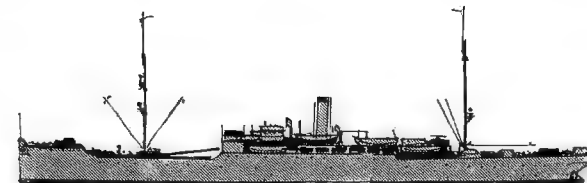
BLACK HAWK.
(*Destroyer Tender.*)



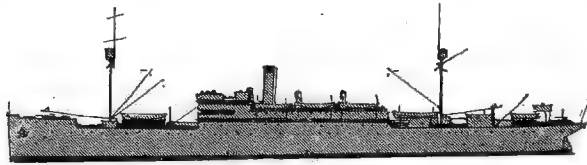
HANNIBAL.



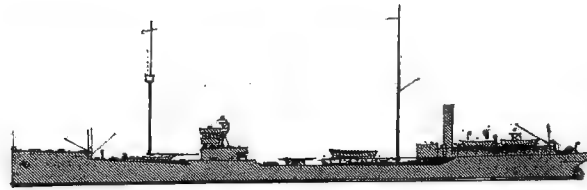
ARCTIC. BOREAS. YUKON.
(*Store Ships.*)



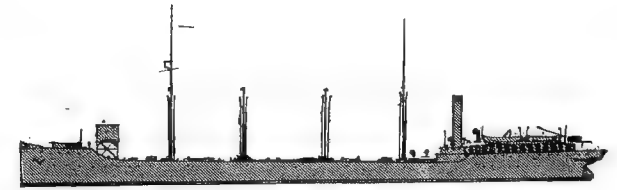
SAVANNAH.
(*Stm. Tender.*)



BRIDGEPORT.
(Destroyer Tender.)



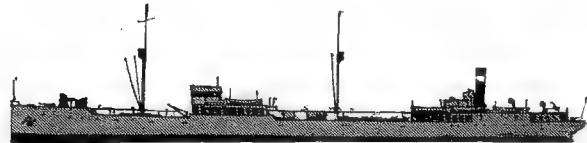
BRAZOS. NECHES. PECOS. CUYAMA.
(Oilers.)



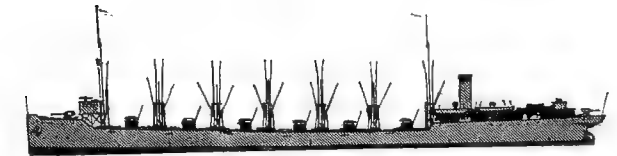
MAUMEE.
KANAWHA.
(Oilers.)



HOLLAND.
(S/m. Tender.)



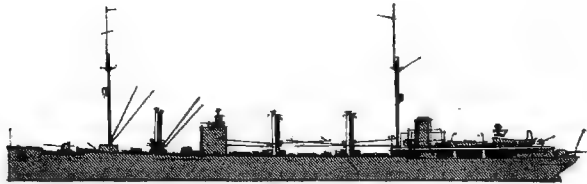
RAPIDAN. RAMAPO. TRINITY.
SALINAS. SAPELO. KAWEAH.
TIPPECANOE. SEPULGA. LARAMIE.
(Oilers.)



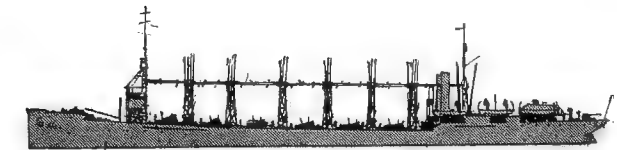
NEREUS.
PROTEUS.
(Colliers.)



MEDUSA.
(Repair Ship.)



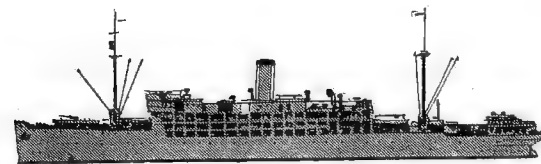
NITRO. PYRO.
(Ammunition Ships.)



JASON. ORION. NEPTUNE.
(Colliers.)



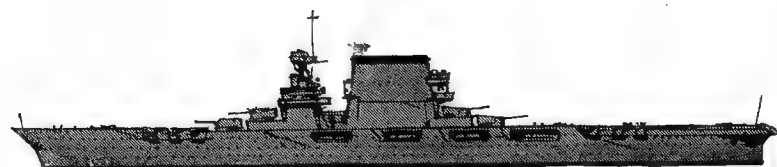
HENDERSON.
(Transport.)



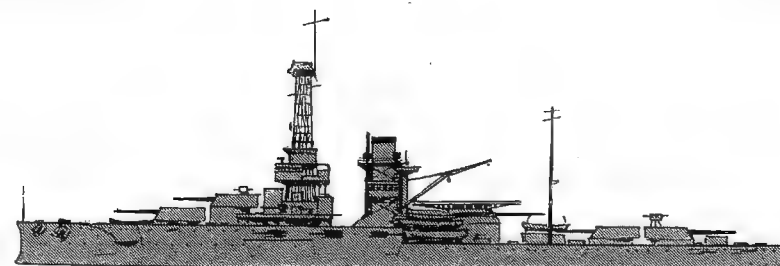
CANOPUS.
(S/M. Tender.)



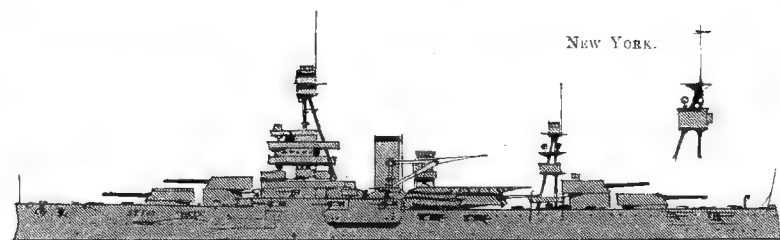
CAMDEN.
(S/m. Tender.)



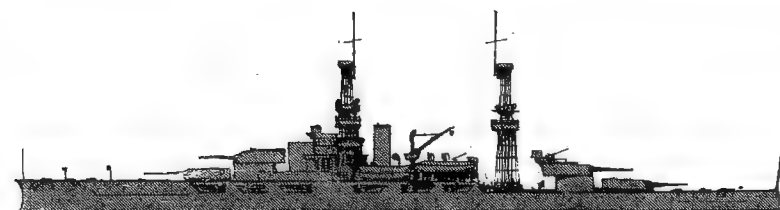
SARATOGA. LEXINGTON.



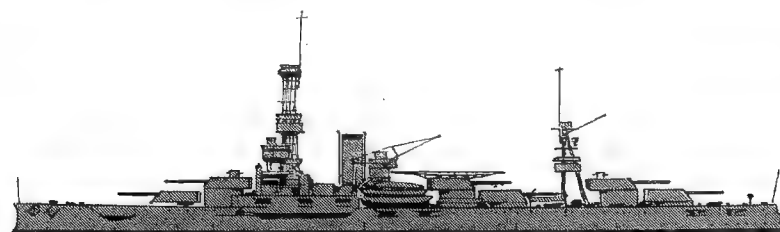
UTAH. FLORIDA.



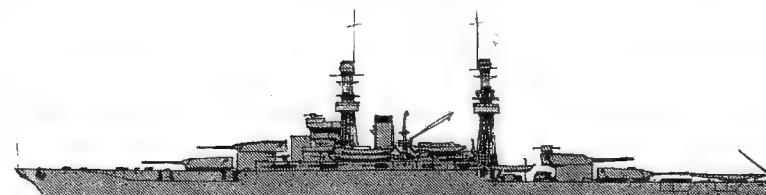
TEXAS. NEW YORK.



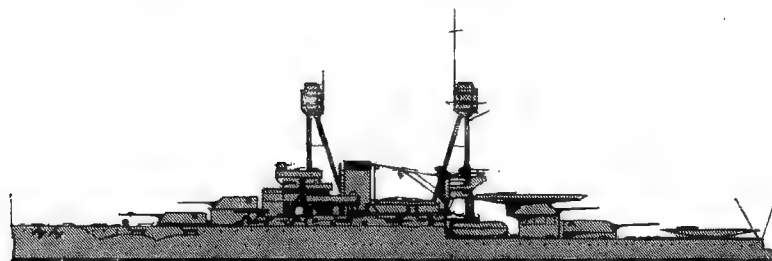
ARIZONA. PENNSYLVANIA.



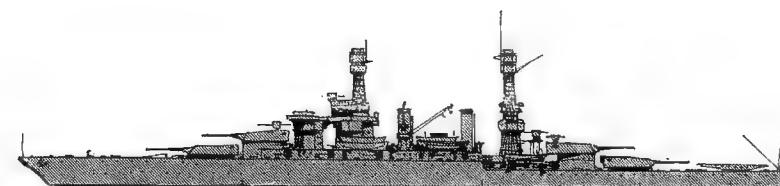
ARKANSAS. WYOMING.



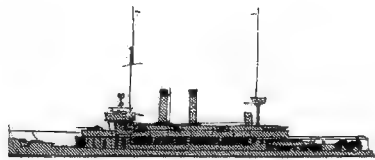
NEW MEXICO. IDAHO. MISSISSIPPI.



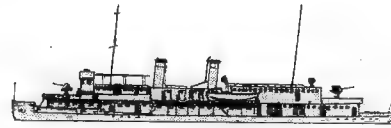
NEVADA. OKLAHOMA.



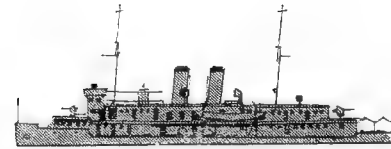
COLORADO. WEST VIRGINIA. CALIFORNIA.
MARYLAND. TENNESSEE.



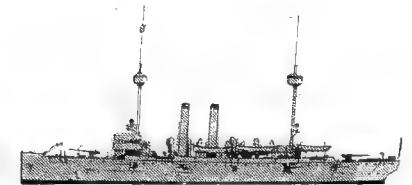
MONOCACY.
PALOS.
(River Gunboats.)



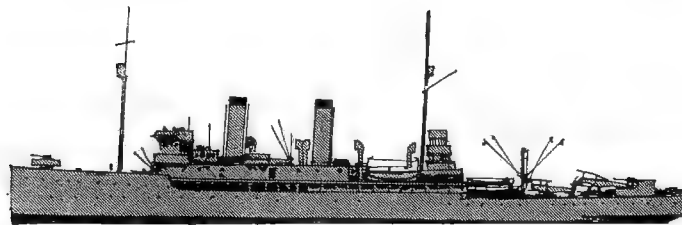
LUZON.
MINDANAO.
(River Gunboats.)



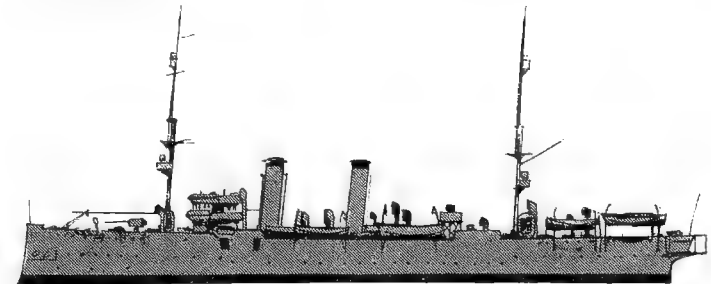
GUAM.
TUTUILA.
(River Gunboats.)



GALVESTON.
DENVER.



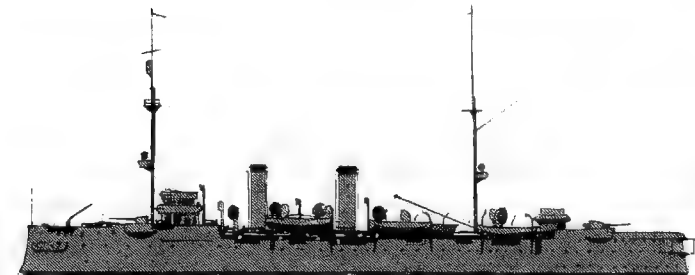
AROOSTOOK. OCLALA.
(Mine Layers.)



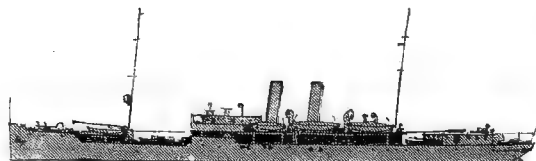
SAN FRANCISCO.
(Mine Layer.)



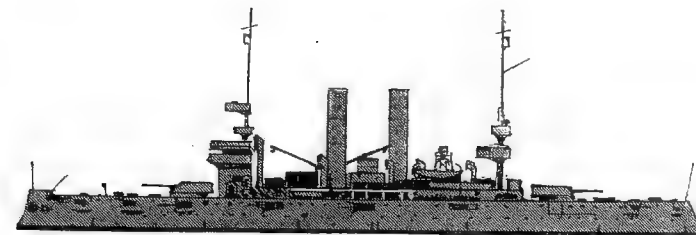
ISABEL.
(Patrol Vessel.)



BALTIMORE.
(Mine Layer.)



KITTEERY.



ROCHESTER.



OMAHA class (10 ships)

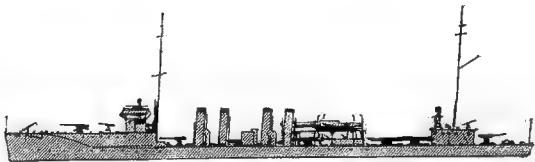
DESTROYERS.



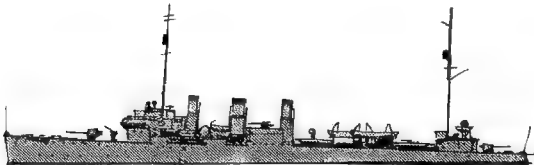
PERKINS. STERETT. WALKER.
MAYRANT. WARRINGTON.



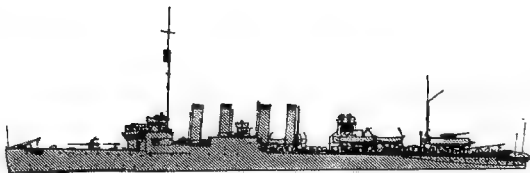
Flush Deckers.



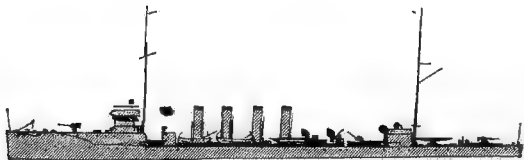
"1000 Tonners."



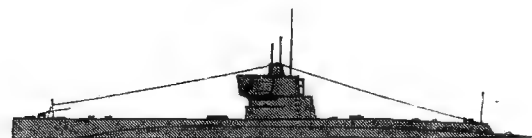
CONNOR. STOCKTON. GWIN.



Light Minelayers.



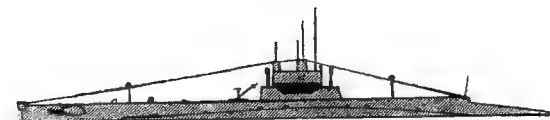
"1000 Tonners"



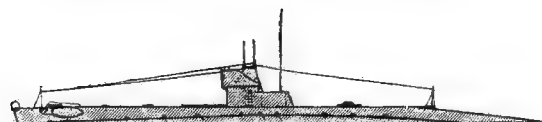
"H" Class.



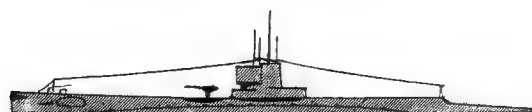
K 1—8.



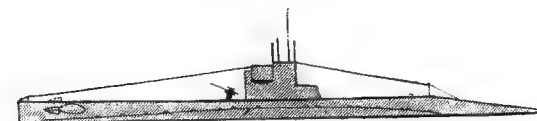
L2, 3, 9, 11. (4).



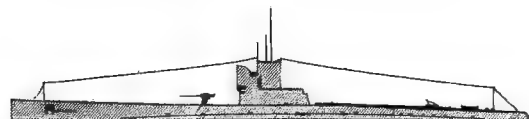
N 1—3.



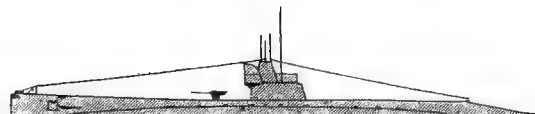
R 1—20. (20).



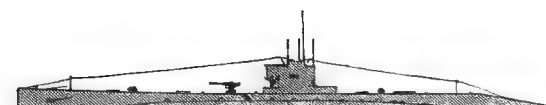
O 1—4, 6—10. (9).



O 11—16. (6).



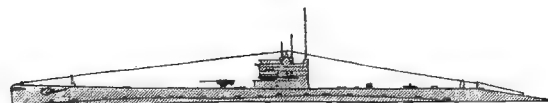
R 21—27. (7).



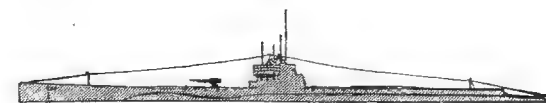
S 30—41. (12).



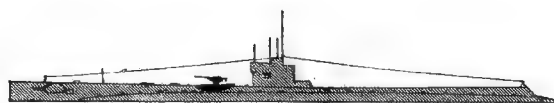
S 4, 6—13. (9).



S 42—47. (6).



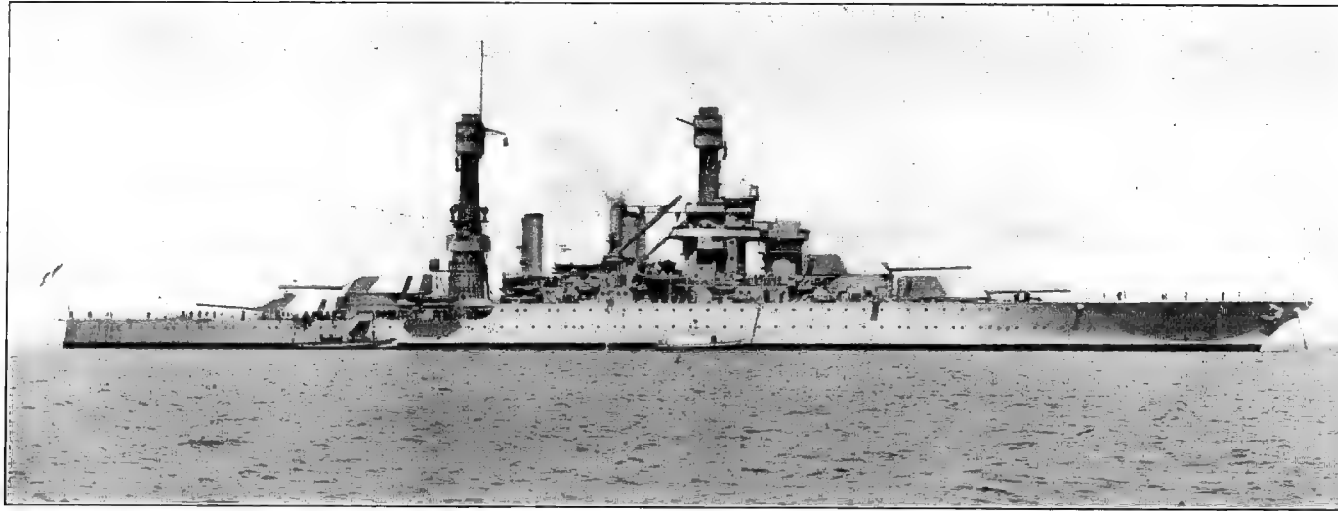
S 48—51. (4).



T 1—3.

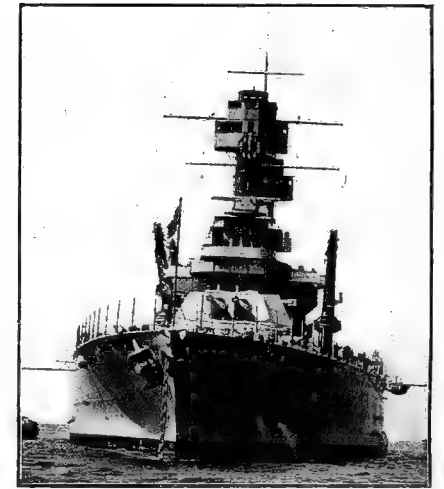


V 1—3



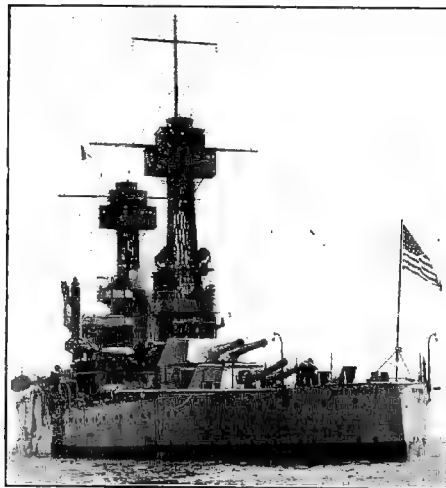
WEST VIRGINIA.

1924 Photo, Abrahams.



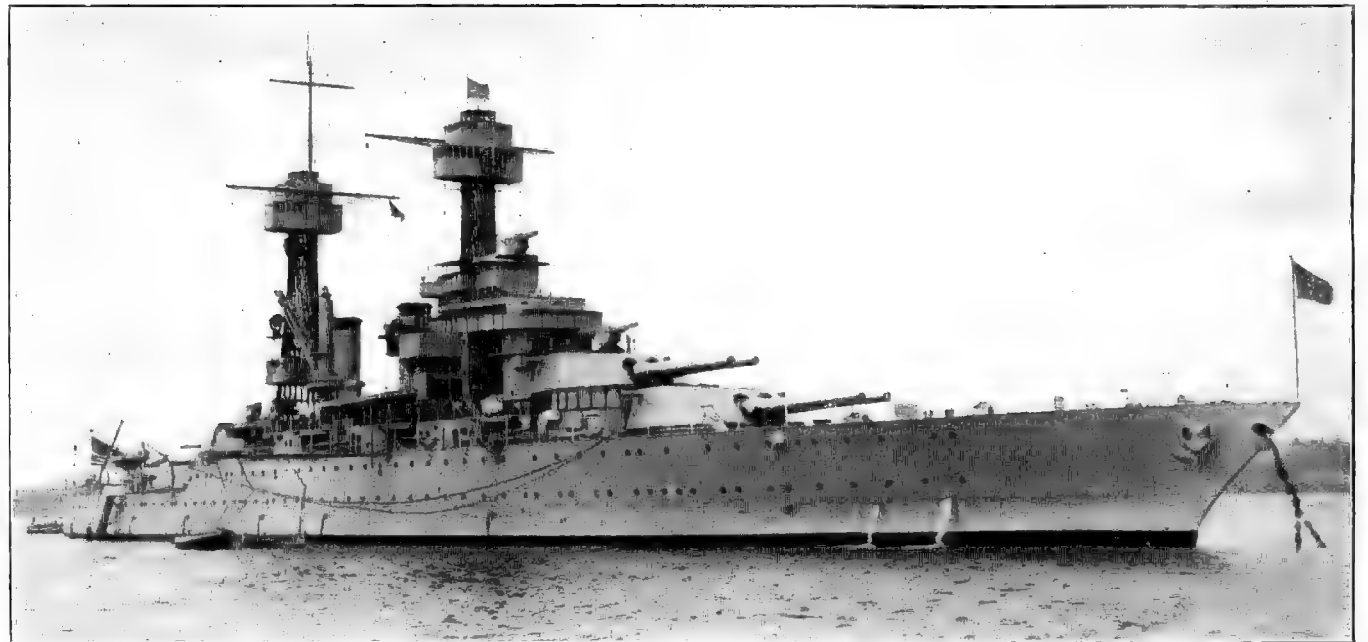
W. VIRGINIA.—bow view.

1924 Photo, Abrahams.



W. VIRGINIA.

1924 Photo, Abrahams.



MARYLAND.

1926 Photo, W. W. Stewart, Esq.

(1919 & 1917) BATTLESHIPS—FIRST LINE (BB).

(MARYLAND CLASS—3 SHIPS.)

COLORADO (March 22nd, 1921), **MARYLAND** (March 20th, 1920),
and **WEST VIRGINIA** (Nov. 19th, 1921).

Normal displacement, 32,600 tons. Full load, 33,590 tons. Complement, 1407.

Length (w.l.), 600 feet. (o.a.), 624 feet. { Mean draught, 30½ feet.
Beam, 97 feet 3½ inches. { Max. „ 31 ft. 3½ in.

Complement of W. Virginia as fleet flagship, 1486.

Guns (Dir. Con.):

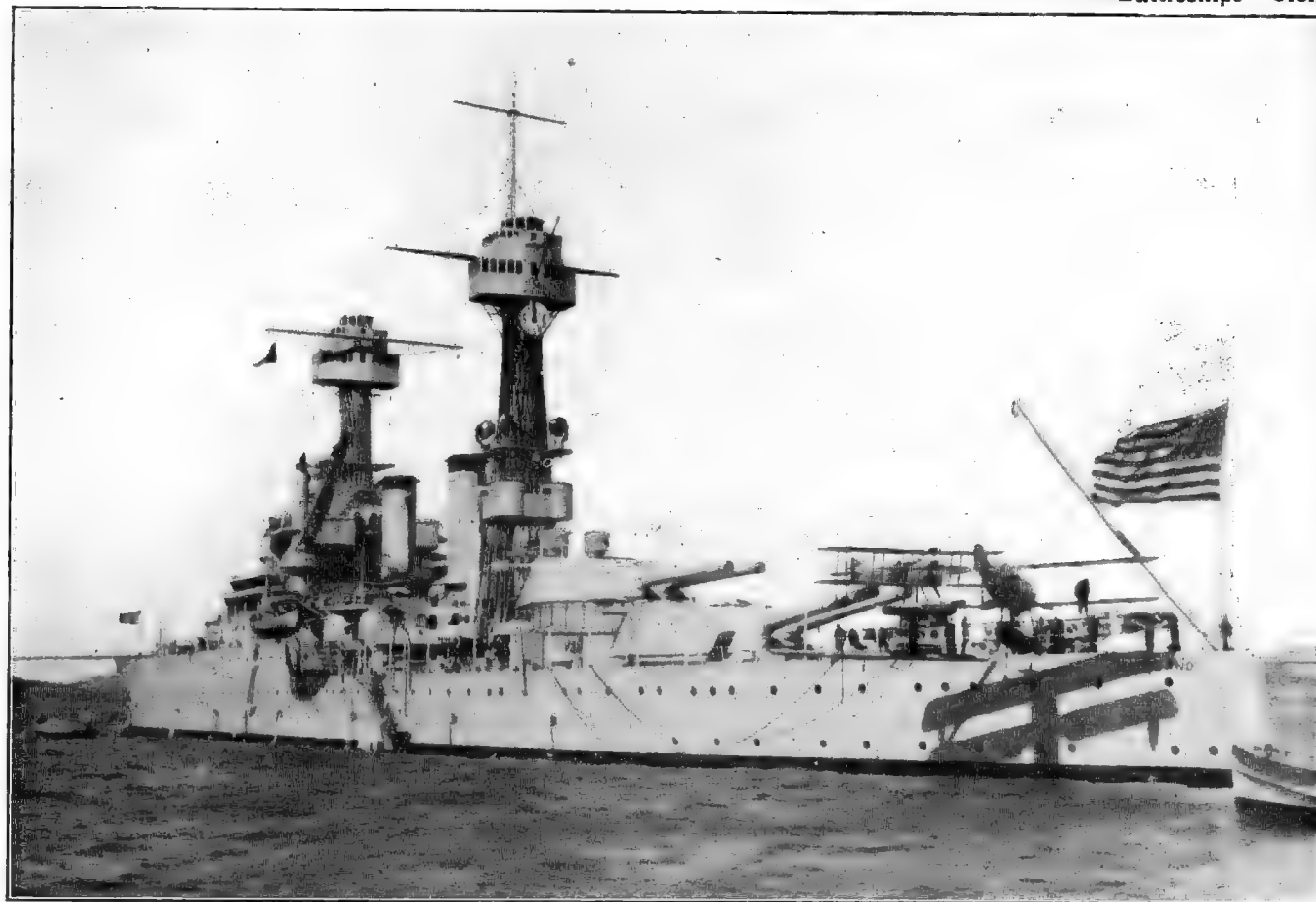
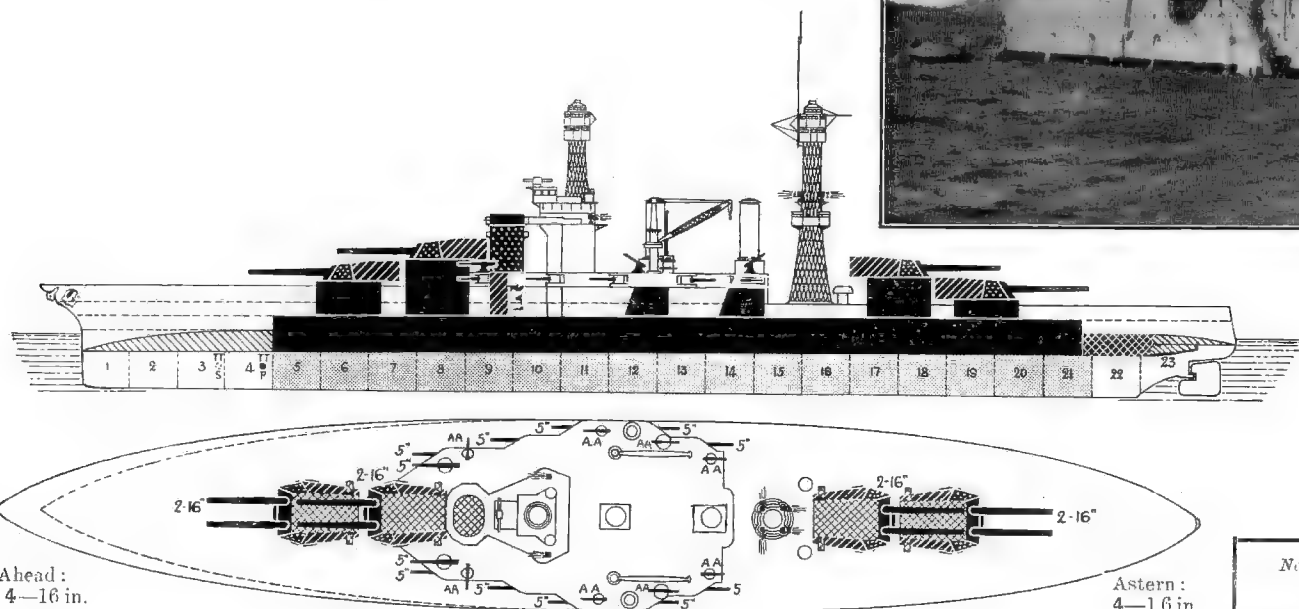
- 8—16 inch, 45 cal. Mk. I.
- 12—5 inch, 51 cal.
- 8—5 inch (AA.) Mk. X.
- 4—6 pdr. (saluting).
- 2—1 pdr.
- 2 M.G.
- 2 landing

Torpedo tubes (21 inch):
2 submerged.

Armour:

- 16"—14" Belt.....
- 8" Belt (alt).....
- 3" Deck (ends).....
- 16"—9" Funnel bases ..
- 18"—9" Turrets.....
- 16" Conning tower and tube.....

Plan revised 1925.



MARYLAND.

1926 Photo, W. W. Stewart, Esq.

Gunnery Notes.—16 inch are a new model, successfully proved at Indian Head, 1917. Maximum elevation, 30°; Maximum range at this elevation unofficially stated to be 33,300 yards. Turrets electrically manoeuvred and with electric hoists. Excepting increase of calibre to 16 inch, otherwise as Notes for Tennessee Class on next page. 2—5 inch guns removed 1922, and 4—3 inch guns added. New director system installed, 1923. Main control is at a height of 120 feet above sea level.

Armour Notes.

As for California and Tennessee.

Appearance Notes.

As for California and Tennessee.

Anti-Torpedo Protection.

Ferrati type triple hull and minute internal subdivision by longitudinal and transverse unperforated bulkheads.

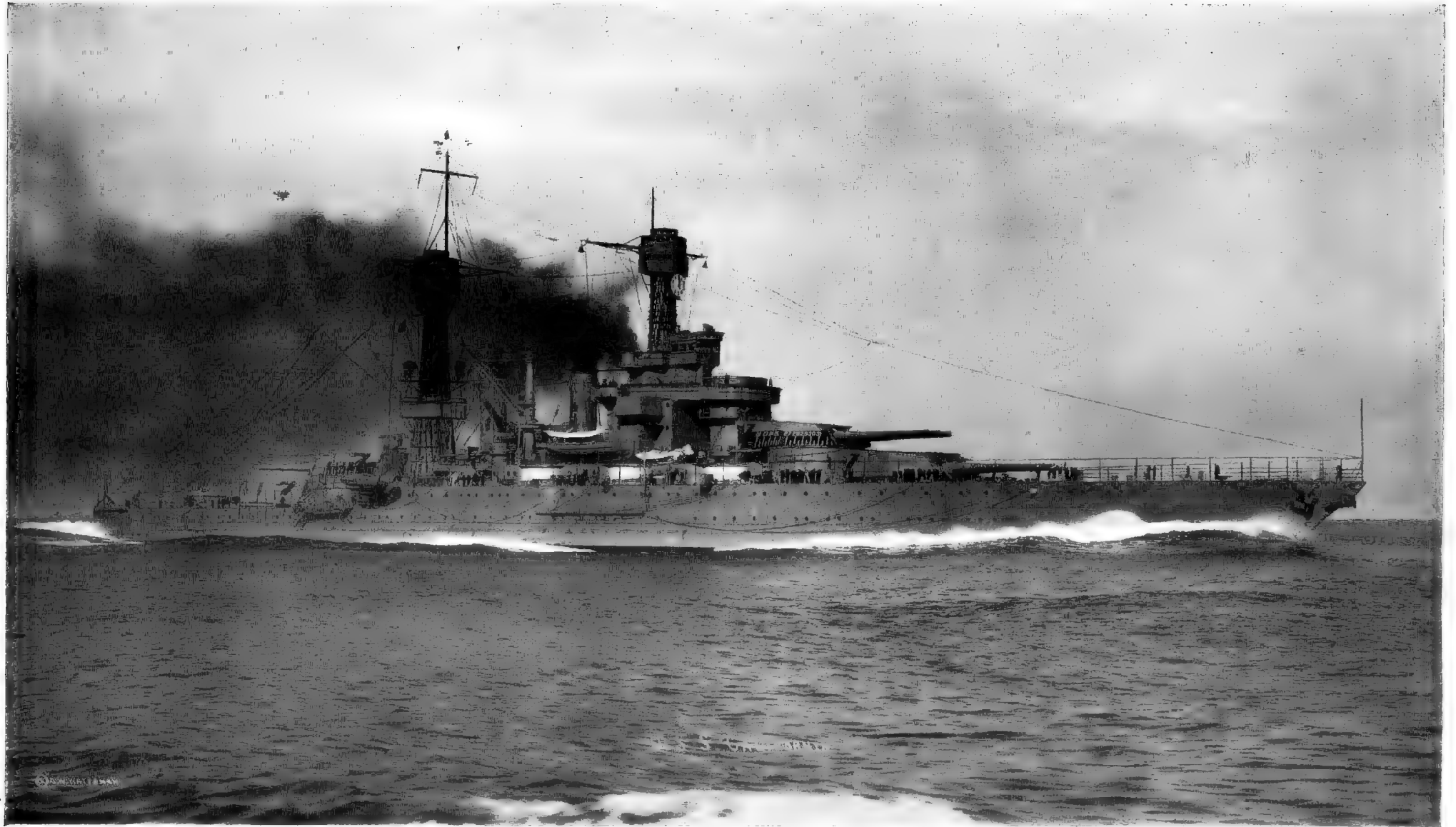
Engineering Notes.

“Electric Drive” is identical with that for California Class (next page), but, in these ships, electric installation has been extended. Part of steam generated in boilers is diverted for running six auxiliary turbo-generators, supplying current to anchor gear, workshop lathes, refrigerating plant, bakeries, &c. Guns are also electrically manoeuvred, ammunition hoists are electric. In fact, every possible item of equipment, even down to potato peelers and ice-cream freezers, is run by electric power. Estimated weight of machinery, 2002 tons. Heating surfaces as Tennessee on next page.

Name	Builder	Machinery	Laid down	Completed	Trials	Boilers	Best recent speed
Colorado	New York S.R. Co.	Westinghouse Co.	May '19	Aug. '23	37,100 = 22.06	Babcock	21
Maryland	Newport News	Gen. Elec. Co.	Apl. '17	July '21	36,167 = 21.07	Babcock	
W. Virginia	Newport News	Gen. Elec. Co.	Apl. '20	Dec. '23		Babcock	

General Notes.—Authorized 1916 as No. 45 (Colorado), No. 46 (Maryland), and No. 48 (W. Virginia). W. Virginia and Maryland both fitted as Flagships. Except for change in primary armament, and slight increase in displacement, they are identical in nearly all respects with California class. Washington scrapped under Naval Treaty. Catapult has been added to equipment of each of this class.

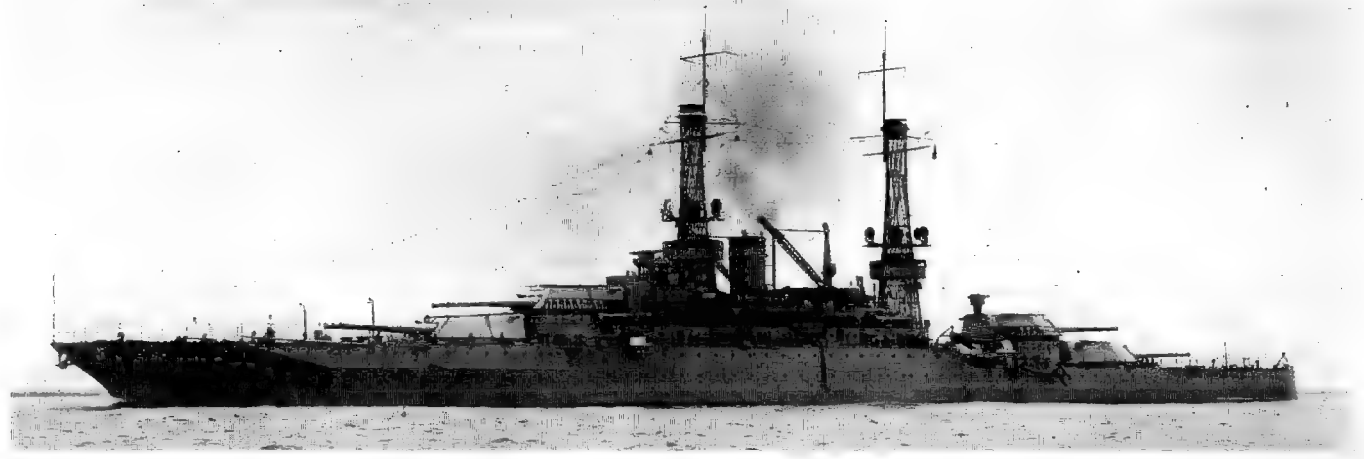
U.S.A.—Battleships.



CALIFORNIA at full speed.

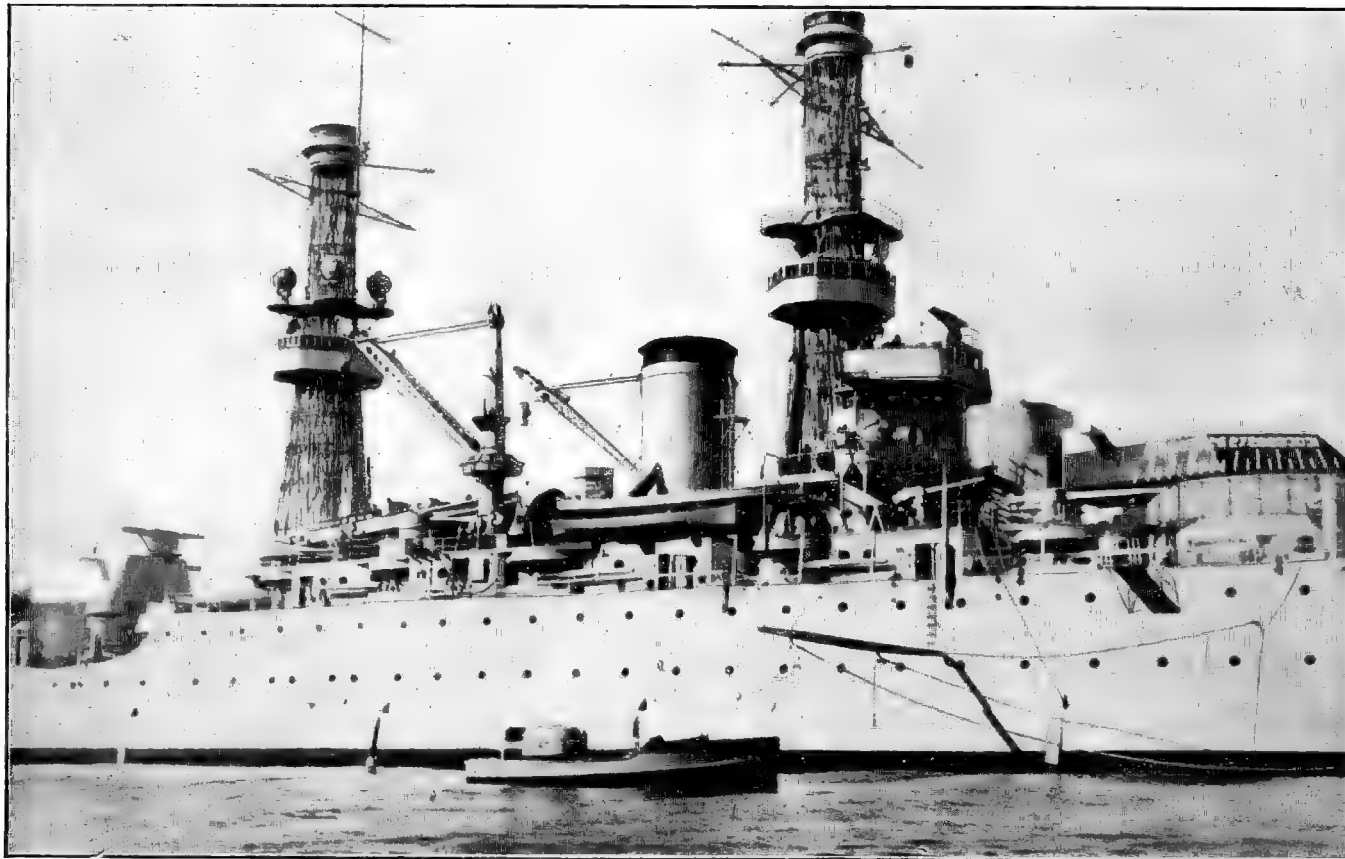
U.S.A.—Battleships.

(1915) BATTLESHIPS—FIRST LINE (BB).



MISSISSIPPI.

1921 Copyright Photo, O. W. Waterman



NEW MEXICO. Detail View.

1926 Photo, W. W. Stewart, Esq.

(New Mexico class—3 ships).

NEW MEXICO (ex-California, April 23rd, 1917), **IDAHO** (June 30th, 1917),**MISSISSIPPI** (January 25th, 1917).

Displacement { Normal, 32,000 tons. } Complements { N.M., 1476 (as flagship).
Full load, 33,000 tons. } I.,
Missi., } 1434.

Length { waterline, 600 feet. } Beam, 97 ft. 4½ in. { Mean draught, 30 feet.
over all, 624 feet. } Max. „ 31ft. 0½ in. }

Guns (Dir. Con.):
12—14 inch, 50 cal., Mk. IV.
12—5 inch, 51 cal.
8—3 inch (AA.), Mk. III.
4—6 or 3½ pdr. (saluting).
2—1 pdr.
2 machine.
1 landing.

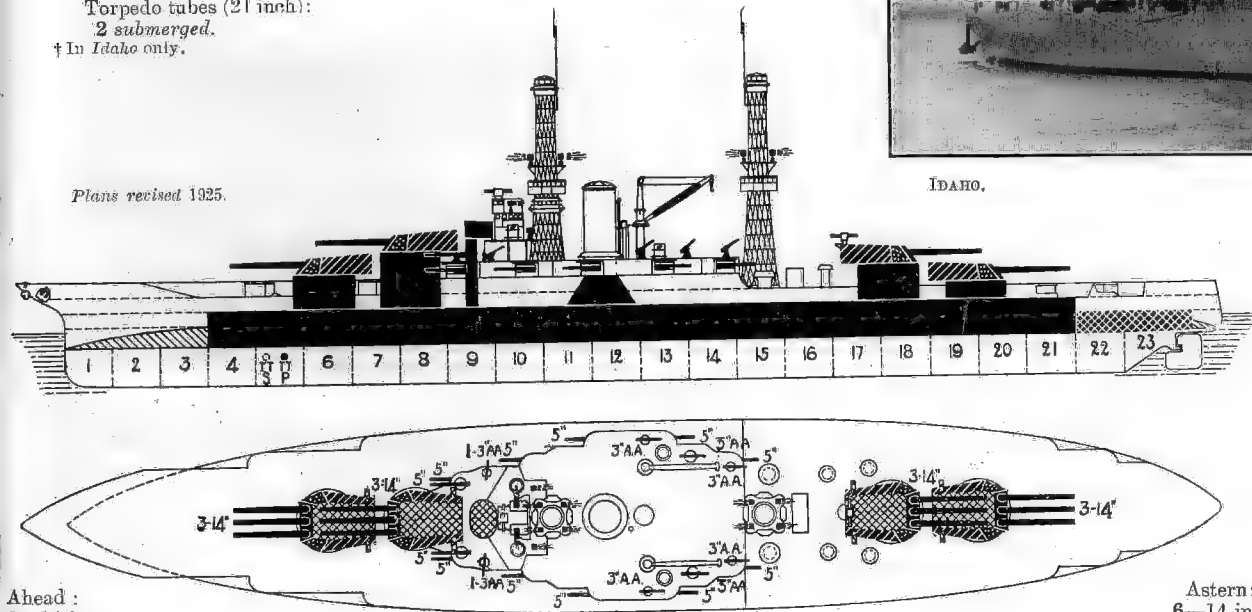
Torpedo tubes (21 inch):
2 submerged.

† In Idaho only.

Armour:

14" Belt (amidships)
8" Belt (aft)
" Deck ends
15"—9" Funnel base
18"—9" Turrets
16" Conning tower & tube

Plans revised 1925.

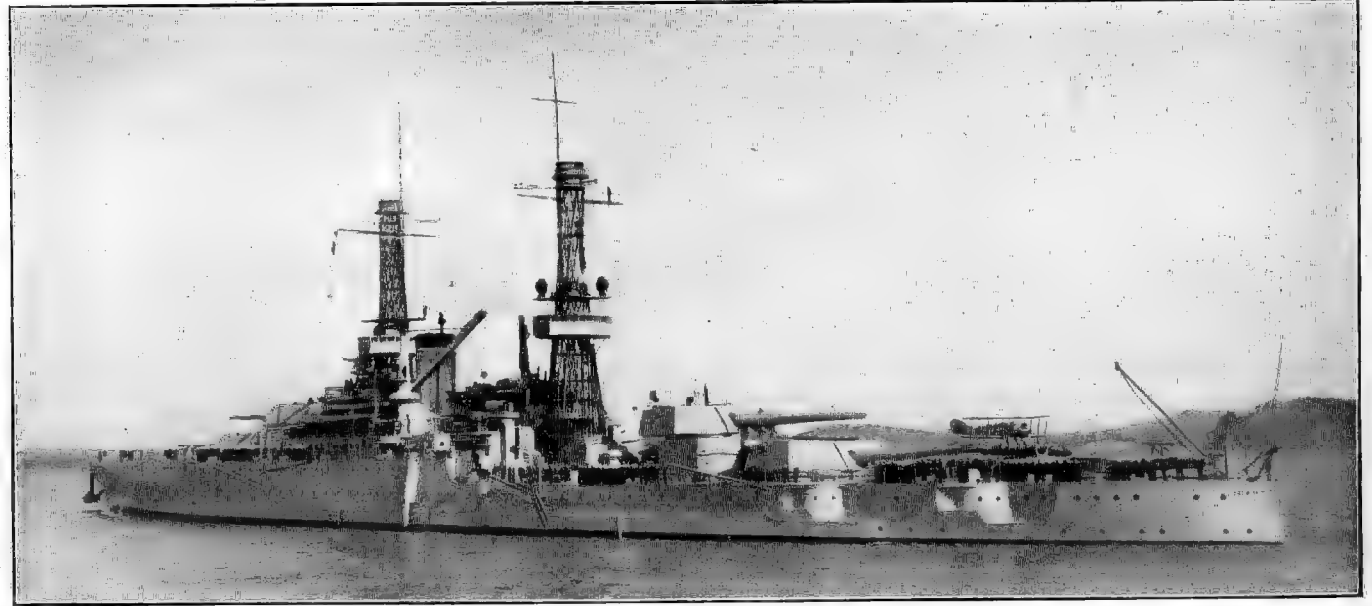


Ahead:
6—14 in.
8—5 in.

Broadside: 12—14 in., 6—5 in., 1—21 in. torpedo tube.

Astern:
6—14 in.
8—5 in.

Machinery: *New Mexico*: G.E. turbines with electric drive (see Notes). *Idaho*: Parsons 4-shaft (geared cruising) turbines. *Mississippi*: Curtis 4-shaft (geared cruising) turbines. 4 screws in all three ships. Boilers: 9 Babcock & Wilcox. Designed H.P., *New Mexico* 27,500, others 32,000=21 knots. Fuel: Oil only, 2200 tons.



IDAHO.

1926 Photo, W. W. Stewart, Esq.

***Armour and Gunnery Notes.**—Generally as *Pennsylvania* and *Nevada* classes, but have still greater degree of internal protection. Belt reaches to 2 ft. above w. l. at stern. As designed, it was intended they should mount 14 in. 45 cal. guns, but while building, the more powerful 50 calibre model of the 14 inch gun was adopted. In this (and all newer ships) triple turret guns mounted in separate sleeves. Elevation up to 15°; maximum range, 25,000 yards (unofficial).

Engineering Notes.—*New Mexico* has 2 turbine-driven generating units and 4 propelling motors. Generators are bipolar alternators. For economical cruising speeds of 15—18 knots and under, one generator is used on 36-pole connection. For higher speeds, 24-pole connection will be employed. One generator can drive ship at 19 kts. in emergency. 175 propeller r.p.m.=full speed. Estimated weight of machinery, *New Mexico* 2351 tons, *Idaho* 2703 tons, *Mississippi* 2298 tons. Estimated heating surface, 55,458 sq. feet (+ 4476 feet superheaters in *New Mexico*). 250 lbs. pressure at steam chest. Electric installation, 6—300 k.w., 120—240 volt turbo-generators in *New Mexico*, 4 in other ships. Oil on trials 1467 tons and 209 feed water. Electric drive of *New Mexico* has proved entirely successful from all points of view. She has proved more economical at all speeds than other two ships, and has most remarkable manoeuvring power, since change from ahead to astern can be made with the greatest facility. In 1920, 28,820 S.H.P. = 21, and 21,650 S.H.P. = 19.35 kts. for 8 hours. She was designed for direct-drive turbines, but altered while building to electric-drive. Her controlling gear is very scattered among various positions.

Name.	Builder and Machinery.	Laid down.	Completed.	Trials. (4 hrs.)	Tons Fuel per day.†			Best recent speed.
					10—	15—	19—kts.	
<i>New Mexico</i>	New York Yard§	Oct., '15	May, '18	31,197=21'08	—	132	263	21
<i>Idaho</i>	N. York S.B. Co.	Jan., '15	Mar., '19	33,100=21'29	—/74	165/194	—/310	21'92
<i>Mississippi</i>	Newport News	Apl., '15	Dec., '17	31,804=21'09	77	—/168	—/305	

General Notes.—Authorized 1914, as No. 40 (*New Mexico*), 41 (*Mississippi*) and 42 (*Idaho*). *New Mexico* fitted as Fleet Flag-ship. Originally, only two ships were to have been built, but the sale of the old *Idaho* and *Mississippi* to Greece contributed two-thirds of the cost for a third unit. *New Mexico* was first named *California*. The type is derived from the *Nevada* design through the *Pennsylvania* class, upon which all the above are improvements. The electrical transmission of *New Mexico* was adopted through the excellent results given by the Melville-Macalpine electric-drive system in the Aircraft Carrier *Langley*. Catapults now carried.

To distinguish. Easily separated from the *Pennsylvania* and *Nevada* classes by yacht bow, and 5 inch battery amidships on forecastle deck level. Derrick posts higher than funnel. Also funnel looks small and short.

*** Unofficial Notes.** †Stated as tons burnt running on cruising turbines/main turbines. §Machinery by G. E. Co. in N.M.

U.S.A.—Battleships.

(1913) BATTLESHIPS—FIRST LINE (BB).

(PENNSYLVANIA CLASS—2 SHIPS).

PENNSYLVANIA (16th March, 1915) & **ARIZONA** (19th June, 1915).

Displacement { Normal, 31,400 tons. } Complement* 1439 as flagships.
Full load, 32,567 tons.

Length { w.l. 600 feet } Beam, 97 feet, 0½ in. { Mean draught, 28½ feet. }
o.a. 608 feet { Max. „ 29½ „ }

War:—Penn. 1574. Ariz. 1620

Guns (Dir. Con.):

- 12—14 inch, 45 cal.
- 14—5 inch, 51 cal.
- 8—3 in. (A.A.), Mk. III.
- 4—3 pdr. (saluting).
- 2—1 pdr.
- 2 M.G.
- 2 landing.

Torpedo tubes (21 inch):
2 submerged.

Armour:

- 14" Belt (amidships)
- 8" Belt (aft)
- 3" Deck (ends)
- 15"—9" Funnel base
- 18"—9" Turrets
- 16" Conning tower & tube ...

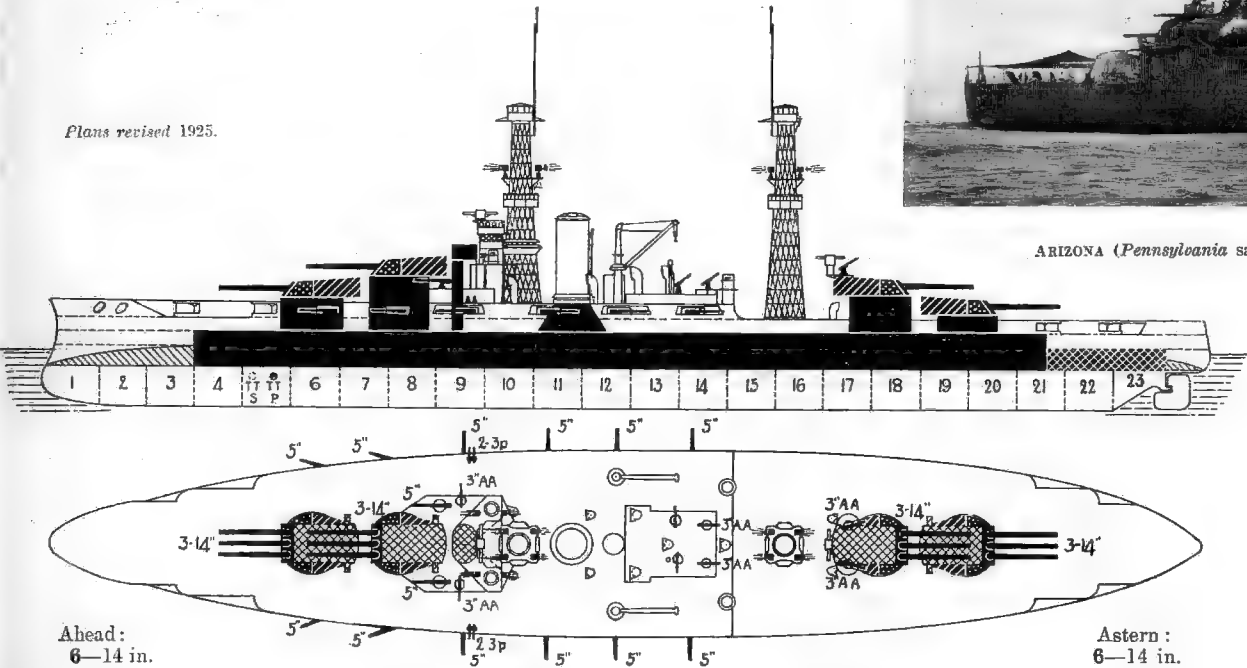
(Total, 8072 tons.)



ARIZONA (Pennsylvania same appearance).

1921 Copyright Photo, O. W. Waterman.

Plans revised 1925.



Ahead:
6—14 in.
2—5 in.

Broadside: 12—14 in., 7—5 in., 1—21 in. torpedo tube.

Astern:
6—14 in.
0—5 in.

Machinery: *Pennsylvania*, Curtis (geared cruising) turbines. 4 screws. *Arizona*, Parsons, (geared cruising) turbines. 4 screws. Boilers: 12 Babcock. Designed H.P. (*Pennsylvania*) 31,500; (*Arizona*) 34,000=21 kts. Fuel: oil only, normal 2,322 tons (694,830 gallons).

*Armour Notes.—Generally as for *Nevada* class on next page. Increase of armour weight due to increased internal protection against submarine explosions and greater length of belt. Armour for each triple barbette, 220½ tons. *Arizona* has cement backing to belt, instead of teak, and armoured fire-control tops.

*Gunnery and Fire Control Notes.—14 inch guns mounted in single sleeve, and can be fired as one piece. Max. range at 15° elevation reported to be 21,000 yards. Triple positions weigh about 650 tons each (guns, mountings and armour). Hoists deliver 1 round per 40 secs., which may be improved to 2 rounds per minute, but three round fired per turret per minute probably represents actual rate of fire in service. Breech blocks worked by hand power. Interior of the shields to 14 inch guns very roomy and well arranged.

Engineering Notes.—Oil fuel carried for trials, 1548 tons and 209 tons feed water. Heating surface, 53,322 sq. feet. Weight of Machinery: *Pennsylvania*, 2380 tons; *Arizona*, 2462 tons. 4—300 k.w. 125-volt turbo-generators 1 *Pennsylvania*; *Arizona* same, but 120-240 volts. In *Pennsylvania*, 240 r.p.m.=full power; in *Arizona*, 220 r.p.m.=full power.

Name	Builder	Machinery	Laid down	Completed	Trials Full Power: 12 hrs.	Tons Fuel per day†		
						10—	15—	19—kts
<i>Pennsylvania</i>	Newport News	Newport News	Oct.'13	June,'16	29,366=21.05	65/—	90/—	—/—
<i>Arizona</i>	New York Yard	New York Yard	Mar.'14	Oct.'16	34,000=21	76/—	167/174	—/30

General Notes.—*Pennsylvania* authorized 1912, as No. 38, *Arizona* 1913, as No. 39. Both ships are enlarged and improve *Nevadas*. They have proved excellent sea boats, very steady gun platforms, and have proved to be very economic ships. Their general design is marked by great simplicity and a very high standard of excellence. Living quarters are very roomy and well ventilated. Both are fitted as Flagships. Each carries a catapult astern.

The sum of \$14,800,000 has been appropriated for modernising *Arizona* and *Pennsylvania*, 1929. "Fighting Ships" officially informed that alterations will be very similar to those effected to *Oklahoma* and *Nevada*.

*Unofficial Notes. †Consumptions are tons oil burnt when running on cruising turbines/main turbines.

Battleships—U.S.A.








OKLAHOMA (March 23rd, 1914) & **NEVADA** (July 11th, 1914).

Displacement { *Normal*, 27,500 tons. } Complement, both 1384.
 { *Full load*, 28,400 tons. }

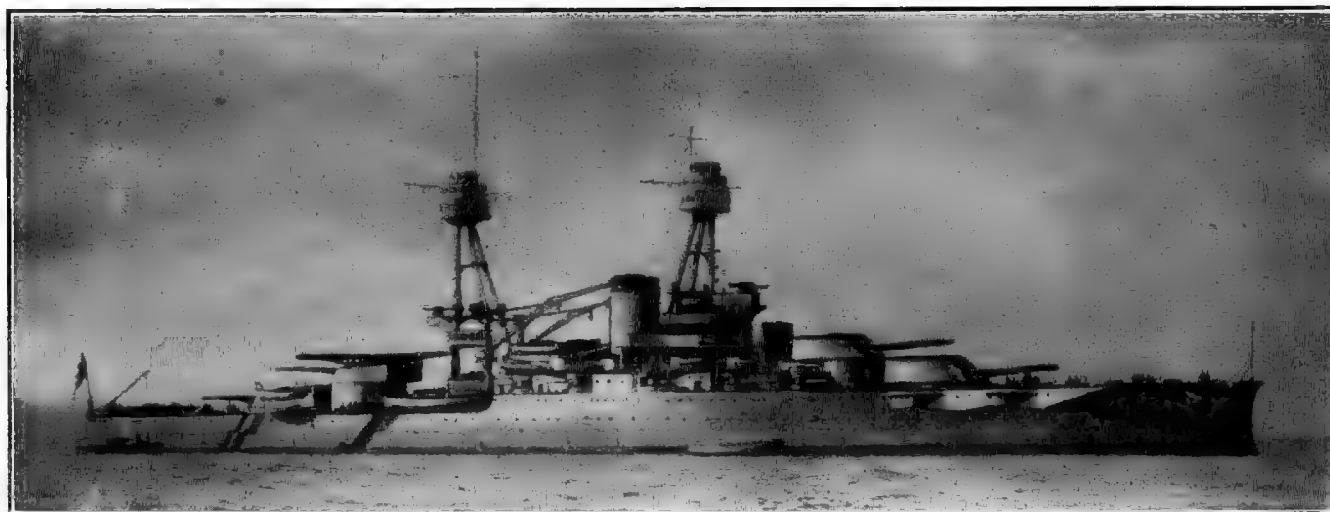
Length { waterline, 575 feet.
over all, 583 feet. } Beam, 95 ft. 2½ ins. { Mean draught 28½ feet.
Max. „ 29 ft. 7 ins.

² War: *Nevada*, 1598, *Oklahoma*, 1628.

Guns (Dir. Con.) :
 10—14 inch, 45 cal.
 12—5 inch, 51 cal.
 8—5 inch, 25 cal. A.A.
 4—6* or 3⁺ pdr. (saluting).
 2—1 pdr.
 2 machine.
 1 landing.
 Torpedo tubes removed.

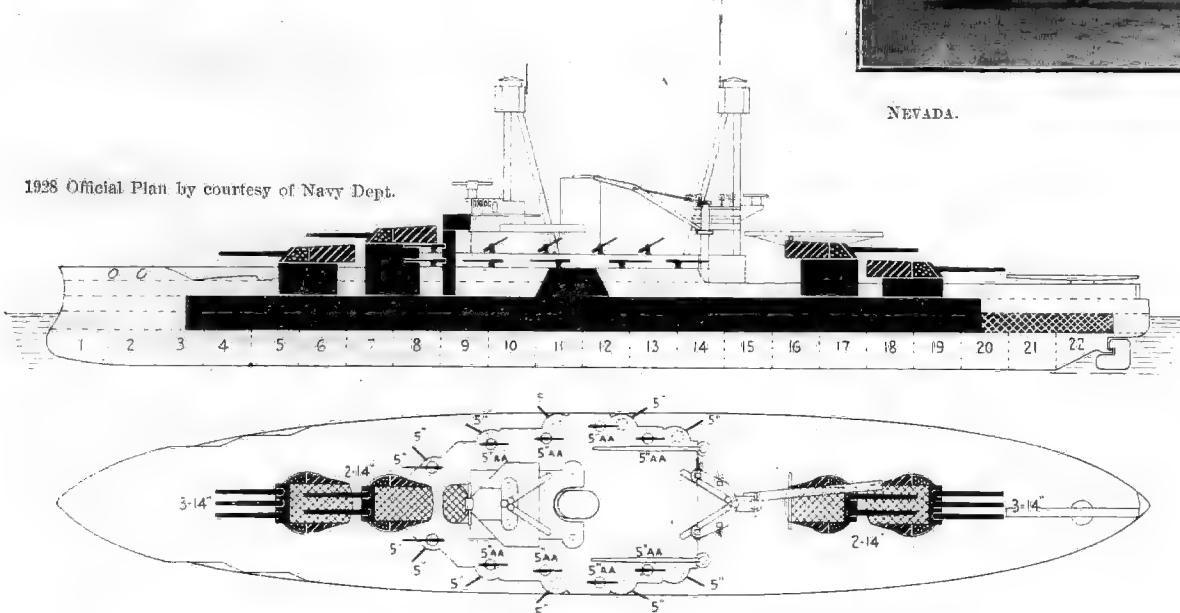
Armour:	
13½" Belt (amidships)	
8" Belt (aft)	
13½" Bulkheads	
13½" Funnel base	
3" Deck (ends)	
18"—9" Triple turrets ..	} 
16"—9" Double turrets ..	
16" Conning tower and tube	
(Total weight, 7664 tons.)	

*In Nevada. †In Oklahoma.



NEVADA

1928 Official Plan by courtesy of Navy Dept.



Ahead:
5—14 in.
4—5 in.

Broadside: 10—14 in., 6—5 in.

Astern :
5—14 in.
2—5 in.

Machinery: *Oklahoma*, Triple expansion, 4 cylinder; *Nevada*, Curtis (geared cruising) turbines. 2 screws in both. Boilers: *O*, 12 Babcock; *N*, 12 Yarrow. Designed H.P. 26,500=20.5 kts. Fuel: oil, 598,400 gallons (2000 tons), *maximum capacity*. Radius of action: 4000 miles at full speed, 10,000 miles at 10 kts.

Special Note:

1928 *Illustration.*

"Fighting Ships" is officially informed that:

The alterations effected to *Oklahoma* and *Nevada* include substitution of tripod for cage masts, and installation of a deck house, on which, 8—5 inch, 25 cal. guns will be mounted. The 5 inch 51 cal. torpedo defence battery will be raised from the main deck to the forecstle deck. The funnel is being moved aft slightly. Cost of alterations will be \$7,000,000 per ship.

*Armour Notes.—Main belt 400 feet long by 17½ feet wide; 8½ feet of it being below *l.w.l.* Lower edge is 8". The ends are unarmoured; the battery also. Plates are applied in vertical strakes. Two protective decks, upper 3" flat, lower 1½" flat, 2" on slopes. Barbette bases are 13½" thick, but turrets are only 12" where below protective deck and behind belt. Barbette shields: 18" per plate for triple positions, 16" per plate for twin positions, 10" sides, 9" back, 5" roof. Sighting slits in conning tower closed by splinter-proof shutters. There is a signalling station protected by 16" armour behind conning tower. These ships mark a new era in naval construction, being the first to embody the "everything or nothing" idea in the matter of protection. No bulkhead between 14 inch guns.

**Gunnery Notes.*—Guns in the triple turrets in one sleeve, can be fired as one piece. Present elevation and range as Pennsylvania type.

Engineering Notes.—*Nevada* has 2 H.P. and 2 L.P. Curtis turbines. Cylinders of *Oklahoma* are H.P. 36.5", I.P. 59.5", L.P. 21" 78". Stroke, 48". Total heating surface, 45,980 sq. feet. Weight of machinery, *Nevada*, 1860 tons; *Oklahoma*, 1923 tons. Electric installation in both is 4 generating sets of 300 k.w., 125 volts, 2400 amp. each. Boilers are in 6 compartments and occupy less than 80 feet of length. Boilers are large tube "Express" type, those specially designed by Messrs. Babcock & Wilcox for *Oklahoma* proving most satisfactory. No superheaters in either ship. Electric-driven f.d. blowers proved too unreliable, and were replaced by steam turbine-driven blowers. All oil fuel carried in double bottom; no wing tanks.

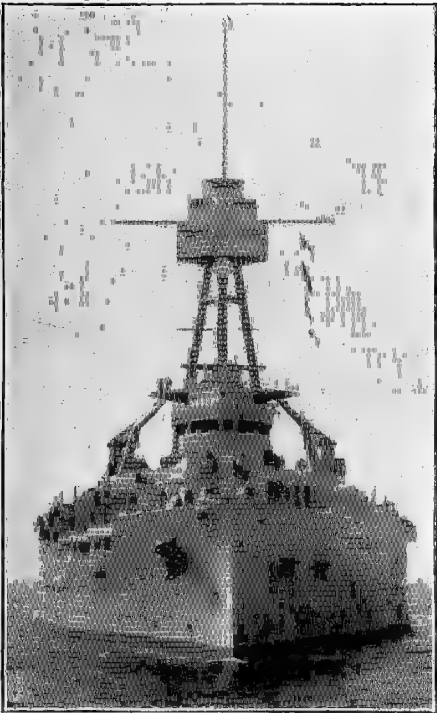
Name	Builder	Machinery	Laid down	Completed	Trials: (Full Power—12 hrs.)	Tons fuel per day:		
						10 kts.	15 kts.	19 kts.
Oklahoma	N. York S. B. Co.	N. Y. S. B. Co.	Oct. '12	May, '16	21,703=20'58	77	143	278
Necada	Fore River Co.	Fore River	Nov. '12	Mar. '16	23,312=20'53	50'5" 77%	132'5" 149%	— 210%

†Cruising turbines. §Main turbines.

General Notes.—Authorized 1911 as No. 36 (*Nevada*), 37 (*Oklahoma*). Each carries a catapult astern.

*Unofficial Notes.

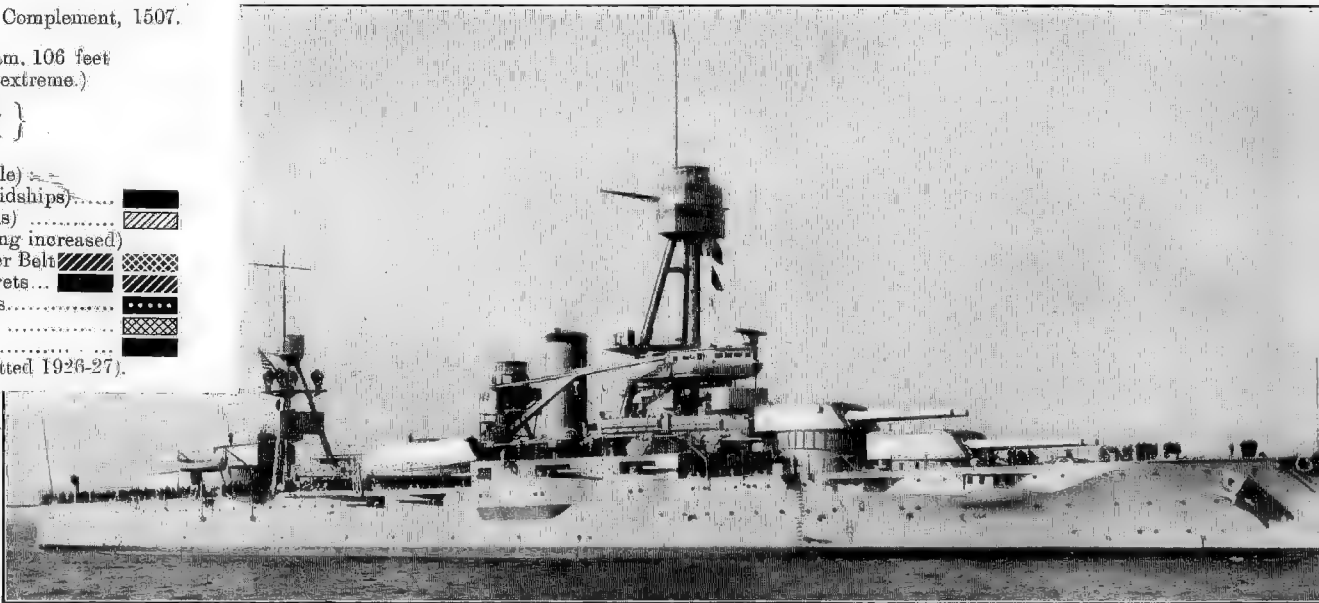
(1911) BATTLESHIPS—FIRST LINE (BB).



NEW YORK. 1928 Photo.

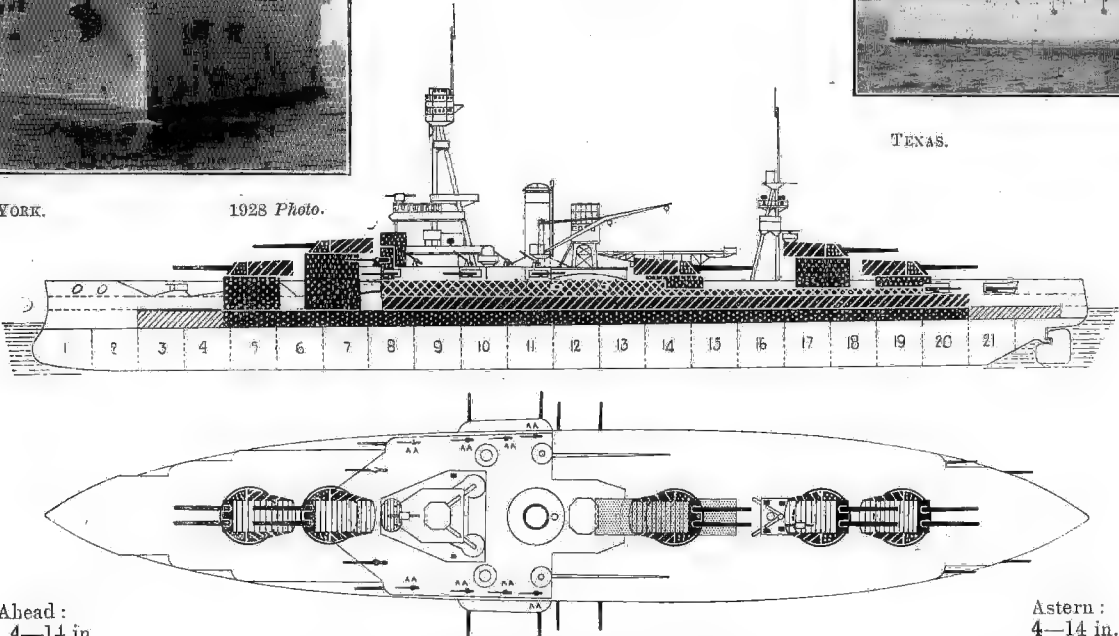
(TEXAS CLASS—2 SHIPS.)
NEW YORK (Oct. 30th, 1912) and **TEXAS** (May 18th, 1912).
Displacement, { Normal, 28,700 tons. } Complement, 1507.
 { Full load, 30,000 tons. }
Length (waterline), { 565 feet. } Beam, 106 feet
Length (over all), { 573 feet. } (extreme.)
 { Mean draught, 28ft. 7ins. }
 { Max. " 29ft. 7ins. }
Guns (Dir. Con.):
10—14 inch, 45 cal.
16—5 inch, 51 cal.
8—3 inch AA., Mk. III.
4—3 pdr. (saluting).
2—1 pdr.
2 M.G.
2 landing.
Torpedo tubes (removed).
Armour (Midvale):
12" Belt (amidships).....
" Belt (ends).....
3" Deck (being increased)
9"—6" Upper Belt.....
14"—8" Turrets.....
12" Barbettes.....
6" Battery.....
12" C.T.....
(Bulges fitted 1926-27).

Plans revised 1927.



TEXAS.

1927 Official Photo.



Ahead:
4—14 in.
6—5 in.

Broadside: 10—14 in., 6—5 in.

Astern:
4—14 in.
6—5 in.

Machinery: Vertical triple expansion, 4 cylinder. 2 screws. Boilers: 6 Bureau Express (37,020 H.S. and 6096 H.S. superheat). Designed H.P. 28,100 = 21 kts. Oil: 5200 tons.

Special Note.

The alterations recently effected in the Battleships of the *Florida*, *Arkansas*, *Texas* classes, include oil burning installation, anti-aircraft defence, increased underwater protection and improved aircraft handling arrangements. All carry catapults.

Gunnery Notes.—New fire control system installed 1926, with tripod foremast.

Engineering Notes.—Builders of turbine engines in the U.S. refused to adopt the standards laid down by the Navy Department. Accordingly, in these ships, reciprocating engines were reverted to, to show the turbine builders that the Navy Department was determined to have turbines built to official specification, or else the older type of engine would be taken up again. Cylinders: H.P. 39", I.P. 63", L.P. (2) 83". Stroke: 48". Weight of machinery: *Texas* 1971 tons; *N.Y.* 2048 tons, both exclusive of electric lighting equipment. Electrical installation: 4 sets each of 300 k.w., 125 volts, 2400 amps., by General Electric Co. Both ships converted to oil burning.

Name	Builder	Machinery	Laid down	Completed	Trials: Full Power.	Boilers	Best recent speed
<i>Texas</i> <i>New York</i>	Newport News New York Yard	Newport News New York Yard	Apl., '11 Sept., '11	Mar., '14 Apl., '14	}	Bureau Express	...

General Notes.—Authorized 1910 as No. 34 (*N.Y.*) and 35 (*Texas*). Both ships fitted as flagships. Are very economical ships and most successful steamers. *Texas* cost about £2,194,000.

(1910) BATTLESHIPS—FIRST LINE (BB).

Battleships—U.S.A.

(ARKANSAS CLASS—2 SHIPS.)

ARKANSAS (Jan. 14th, 1911) & WYOMING (May 25th, 1911).

Displacement, { Normal, 27,900 tons. } Complement, 1489.
Full load, 29,000 tons. }

Length { (w.l.), 554 feet. } Beam, 106 feet (extreme). { Mean draught, 28½ feet.
(o.a.), 562 feet. } Max. „ 29 ft. 7 in.

Guns (Dir. Con.):

- 12—12 inch, 50 cal.
- 16—5 inch, 51 cal.
- 8—3 inch A.A., Mk III.
- 4—6* or 3† pdr. (saluting).
- 2—1 pdr.
- 2 machine.
- 2 landing.

Torpedo tubes (removed).

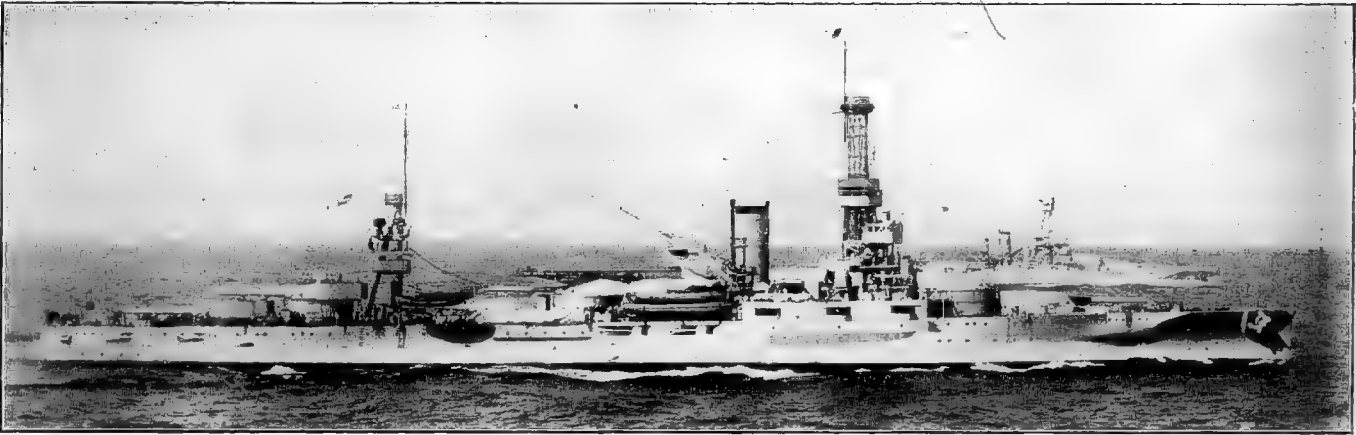
Armour (Midvale):*

- 11"—9" Belt amidships }
- 5" Belt (ends)
- 12"—9" Turrets
- 11" Turret bases
- 6½" Battery
- 12" Conning tower
- (Bulges fitted 1926-27)

*In Wyoming.
†In Arkansas.

*See Notes.

Plans revised 1927.



ARKANSAS (as modified by reconstruction).

1927 Official Photo.

*Gunners Notes.—Height of guns above water: No. 1 turret, 28½ feet; No. 2, 36½ feet; No. 3, 33 feet; No. 4, 25 feet; No. 5, 31½ feet; No. 6, 23½ feet.

Arms of training: (1) 300°, (2) 270°, (3) 280°, (4) 260°, (5) 330°, (6) 300°. Max. elevation, 15°; range, 24,500 yds.

*Armour Notes.—Main belt 400 feet long, 9" on bottom edge, 11" on upper edge. Upper belt is same, but is 11" on bottom edge and 6½" on upper. Internal protection is by ½" high-tensile longitudinal bulkheads. Two protective decks over all machinery and magazine spaces, one deck at ends. 6½" armour and 1½" splinter bulkheads to funnel uptakes, up to main deck.

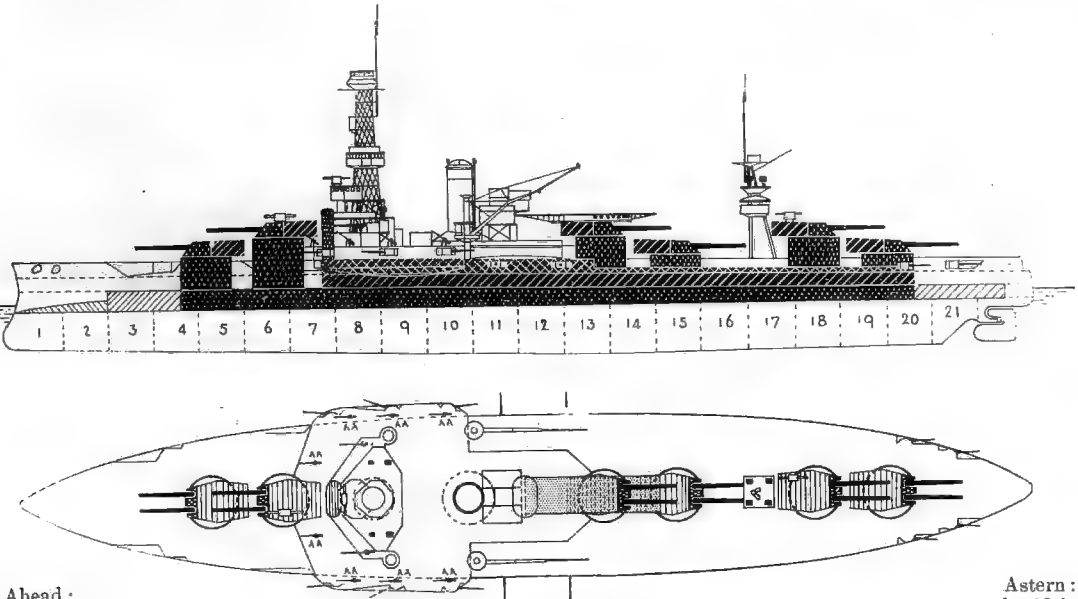
Engineering Notes.—Approximately 148 r.p.m.=10.5 kts., 215=15 kts., 300=20 kts., 320=22 kts. Heating surface: 45,000 sq. feet, superheat 436°. Weight of machinery: 2178 tons in Arkansas, 2095 tons in Wyoming (excluding electric lighting equipment). Electrical installation: 4 sets each 300 k.w., 125 volts, 2400 amps. by General Electric Co. Searchlights: 16. It was first intended that these ships should have combined turbines and reciprocating engines, but the plan was dropped in favour of complete turbine propulsion. Tactical Diameter, 800 yds.

(See also Special Note under Texas class).

Name	Builder	Machinery	Laid down	Completed	Trials (mean)	Boilers	Best recent speed
Arkansas Wyoming	N.Y. Shipbld. Co Cramp	N.Y. Shipbld. Co. Cramp	Jan., '10 Feb., '10	Sept., '12 Sept., '12		White-Forster	

General Notes.—Authorized 1909, as No. 32 (Wyoming), 33 (Arkansas). Contracts awarded Sept. & Oct., 1909. Both fitted as flagships. Freeboard: Forward, 25'; amidships, 19' 2"; at No. 6 turret, 18'; at stern, 16' 3". Both ships underwent extensive alterations and refit, 1925-27.

*Unofficial Notes.



Ahead:
4—12 in.
4—5 in.

Broadside: 12—12 in., 8—5 in.

Astern:
4—12 in.
6—5 in.

Machinery: I.P. and L.P. Parsons turbines, H.P. geared Curtis. 4 screws. Boilers: 4 White-Forster. Designed H.P. 28,000 = 20.5 kts. Oil: 5100 tons.

(UTAH CLASS—2 SHIPS.)

UTAH (Dec. 23rd, 1909) & **FLORIDA** (May 12th, 1910).

Displacement { Normal, 23,700 tons. } Complement, 1079.
Full load, 24,800 tons. }

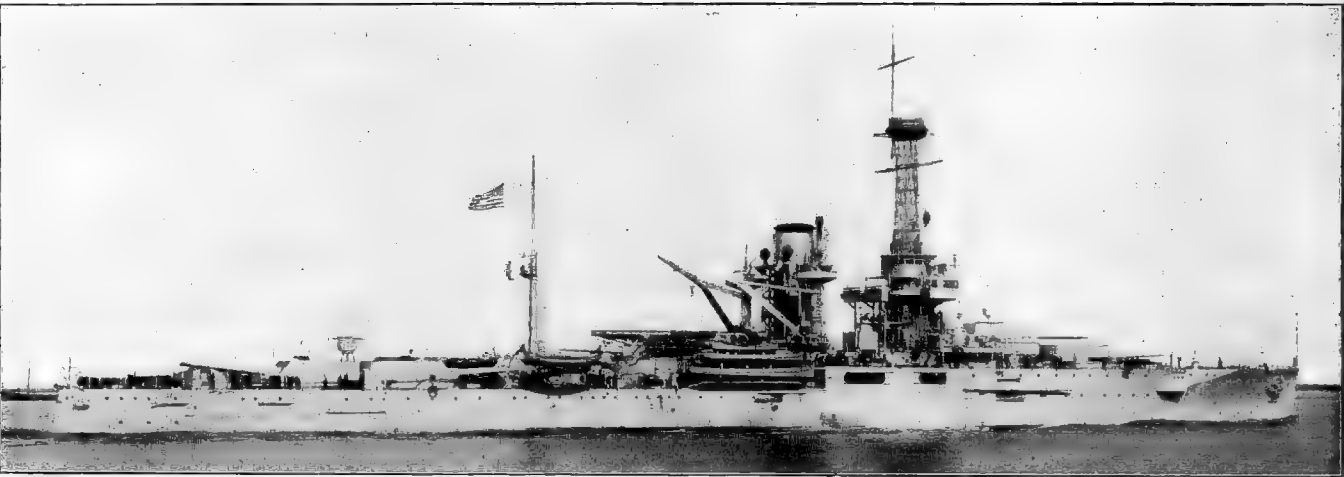
Length { waterline, 510 feet. } Beam, 106 feet { Mean draught, 28 feet 8 inches. }
over all, 521½ feet. } (extreme) { Max. „ 30 feet 1 inch. }

Guns (Dir. Con.):

- 10—12 inch, 45 cal.
- 12—5 inch, 51 cal.
- 8—3 inch anti-aircraft Mk. III.
- 4—6 pdr. saluting in *Florida*.
- 4—3 pdr. saluting in *Utah*.
- 4 machine.
- 2 landing.
- Torpedo tubes (removed).

Armour (Midvale):

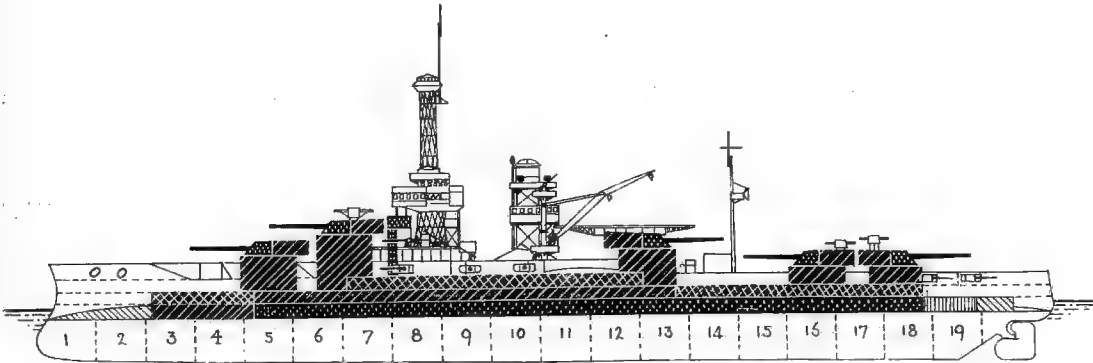
- 11" Belt (amidships)
- 3" Belt (ends)
- 3" Deck (slopes) (being extended).
- 10" Upper belt (amidships)
- 12"—8" Turrets (N.C.)
- 11" Barbettes
- 6½" Battery amidships
- 12" Conning tower
- (Bulges fitted 1926-27).



Plans revised 1927.

FLORIDA as modified by reconstruction. (Gun distribution being modified as in plan.)

1927 Official Photo.



Ahead:
4—12 in.
6—5 in.

Broadside: 10—12 in., 6—5 in.

Astern:
4—12 in.
4—5 in.

Machinery: I.P. and L.P. Parsons turbines, H.P. geared Curtis. 4 screws. Boilers: 4 White-Forster. Designed H.P. 28,000 = 20.75 kts. Oil: 4900 tons.

*Armour Notes.—Main belt 8½ feet wide; upper belt 8 feet wide. 2" splinter bulkheads between all 5 inch battery and 12 inch guns. 4" rear wall to battery. Special sub-division and powerful pumping system against damage by mines or torpedoes.

*Gunnery Notes.—Height of guns above water: in fore fore-turret, 33 feet; after fore-turret, 40 feet; amidship turret, 32 feet; in after pair of turrets, 25 feet. *Utah*'s 12 inch renewed, 1930. Maximum elevation, 15°=22,000 yds. range.

Engineering Notes.—Have new type feed heaters. Heating surface: 45,000 sq. feet, superheat 4364. Weight of Machinery: 1661 tons exclusive of electric lighting equipment. Electrical installation: 4 sets, each 300 k.w., 125 volts, 2400 amps., by General Electric Co.

(See also Special Note under *Texas* class).

Name	Builders	Machinery	Laid down	Completed	Trials: Full Power.	Turbines	Boilers	Best recent speed
<i>Florida</i> <i>Utah</i>	New York Y. N.Y.Shipbld. Co	New York Yard N.Y. Shipbld. Co.	Mar., '09 Mar., '09	Sep., '11 Aug., '11		Parsons Parsons	White- Forster	22.3

General Notes.—Authorized 1908, as No. 30 (*Florida*), 31 (*Utah*). These ships were completely refitted and modernised, 1924-26.

†Unofficial Notes.

New Construction.

The construction of an Aircraft Carrier of 13,800 tons was authorised in 1929, to be begun before 30th June, 1930.

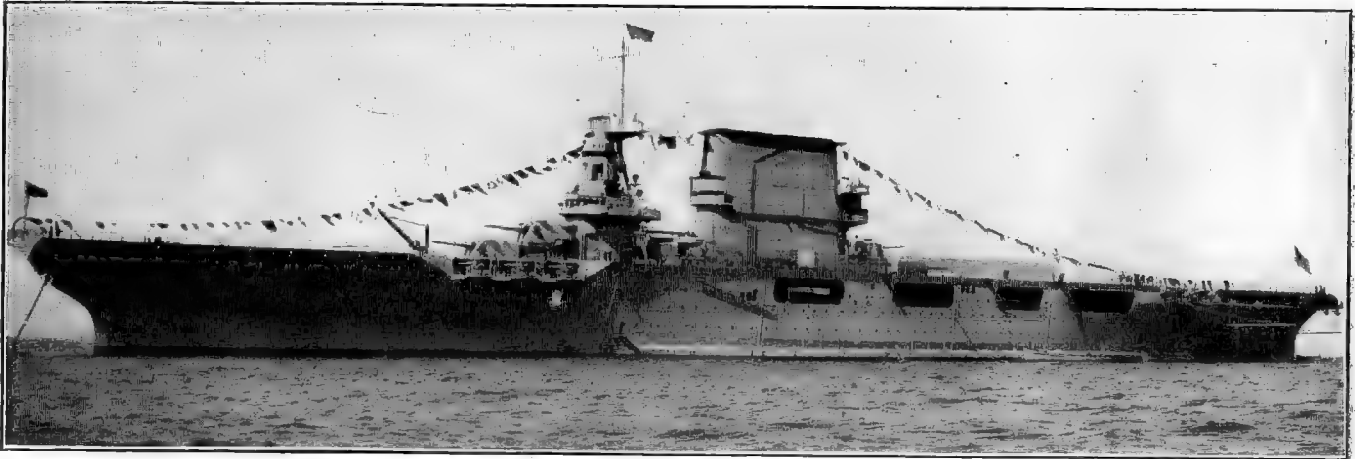
LEXINGTON (3rd Oct., 1925.)

SARATOGA (7th April, 1925.)

Standard Displacement, 33,000 tons.

Complement (including flying personnel) 169 Officers,
1730 men.

Length (p.p.), 850 feet ; (o.a.) 888 feet. Beam, 106 feet (*extreme*).
Draught, 24 feet 1½ inches (*mean*).



SARATOGA.

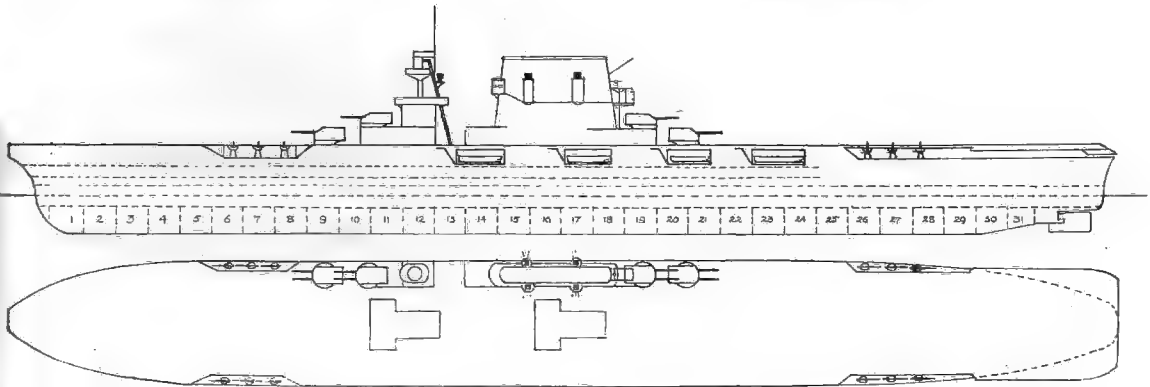
(Additional views on following page.)

1928 Photo, by favour of H. C. Bywater, Esq.

Guns:
8—8 inch, 55 cal.
12—5 inch A.A., 25 cal.
4—6 pdr. saluting.

Armour:
Unofficially reported to have
6" Belt, 600 feet in length,
and 3" deck. Triple hull and
bulge protection.

Plans revised 1926.



Machinery: G.E. Turbines, electric drive. Designed S.H.P. 180,000=33.25 kts. Boilers: Lexington,
16 Yarrow; Saratoga, 16 White-Forster. 4 screws.

Name.	Builder	Machinery	Laid down	Completed	Trials.	Boilers.
Lexington	Fore River S.B. Co.	Gen. Elec. Co.	8/1/21	Dec. '27	153,600 = 33.04	Yarrow
Saratoga	New York S.B. Co.		25/9/20	Nov. '28	158,375 = 33.42	White-Forster

Notes on Lexington and Saratoga.

These two ships were originally authorised in 1916 for construction as Battle Cruisers of 35,300 tons, with seven funnels and boilers disposed on two deck levels. After the War, and as a result of the lessons thereof, plans were to a large extent re-cast, v. F.S. 1919—1921 Editions.

As Aircraft Carriers, these ships show a reduction (from the second Battle Cruiser design) in displacement of about 8,500 tons, achieved mainly by the elimination of eight 16-inch guns in four twin turrets, with mounts, armour, &c. It is believed the main belt protection is retained and that deck protection has been heavily reinforced. The general lines of the hull remain unaltered, and the special system of underwater protection is also adhered to. Flight deck is 880 feet long, from 85 to 90 feet in width, and 60 feet above water line.

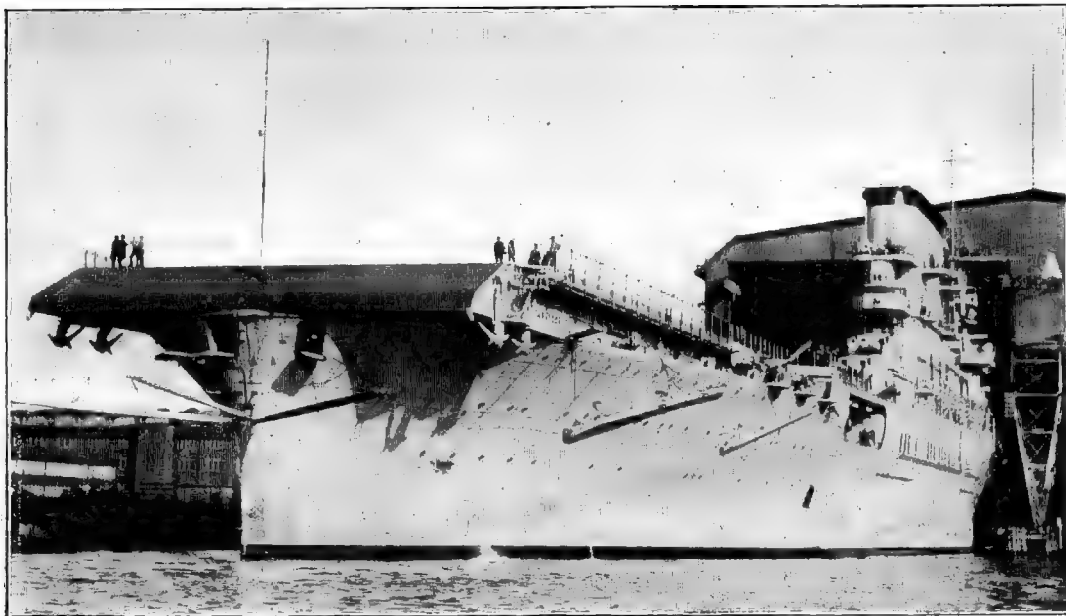
Handling of Aircraft.—The Landing Net is placed just before the recessed stern portion of the Flight Deck; it is about 100 ft. long. Before it is a large T-shaped lift for moving aircraft from Flight to Hangar Deck. There is another and similar T-shaped lift abeam of the mast and C.T. At the bow is a catapult of a new type capable of launching the heaviest aircraft into the air at flying speed with a travel of 60 ft. Before the C.T. and abaft the Navigating Officers' Deck House, and right over to starboard beam, are powerful derricks for lifting seaplanes and flying boats from the water. As a result of experiments with Langley, certain modifications have been made which should enable planes to land safely on deck in any weather.

Ships were originally designed to carry 72 planes each, of which 36 will be bombers. Other reports range from 83 to 120 planes in all, but it is believed that, while 78 can be accommodated under normal conditions, only about half that number can be operated. Understood to have one catapult forward and two aft.

Total cost of these ships, with aircraft, was over \$45,000,000 each.

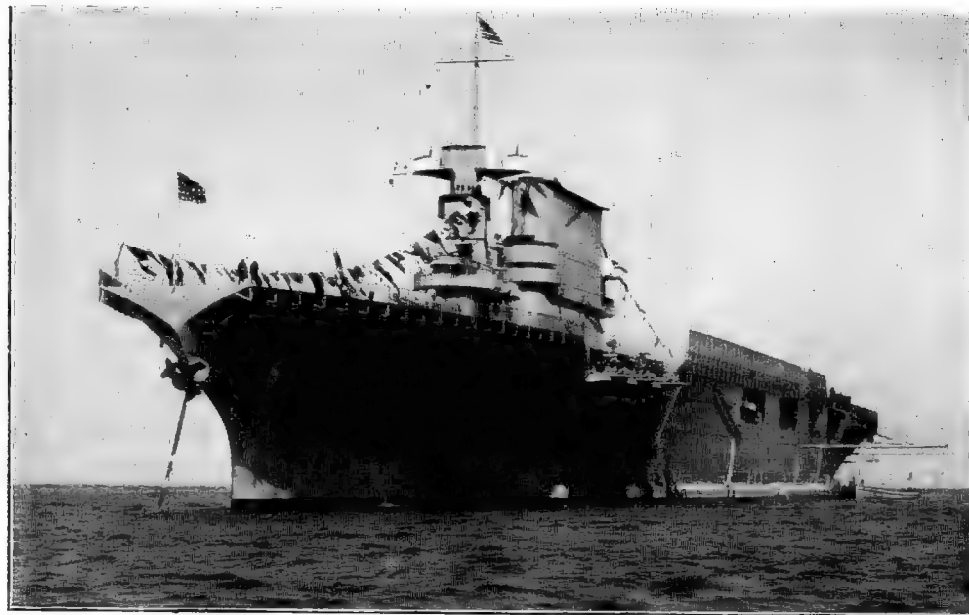
Official view is that further aircraft carriers should not be more than half size of these 2 ships.

Engineering Notes.—Each boiler 11,250 H.P. Steam pressure, 295 lbs. to sq. inch. Fuel consumption estimated at 2000 tons daily under full power. Machinery is the most powerful ever installed in a warship; it is all controlled, so far as main engines are concerned, from one central position. There are over 1000 auxiliary motors, ranging from 425 H.P. ventilating plant down to the small electric motors connected with the self-synchronising electric fire-control arrangements, which develop 1-200th of one H.P. For general distribution through the ship, current is supplied by six turbo-generators of 750 K.W. each. There are eight propelling motors of 22,500 H.P. (two to each of the four shafts), speed 317 R.P.M. The combined illuminating power of the S.L. is equal to 3,260,000 c.p. Altogether, these ships represent the climax of American practice in applying electric power to warship construction. On trials, it is stated that 97% of designed speed was obtained with 85% of designed power. Lexington did the voyage from San Diego to Honolulu (2228 miles) at an average speed of 30.7 kts. A speed of 34.5 kts. was maintained for one hour by the latter ship with S.H.P. 210,000.



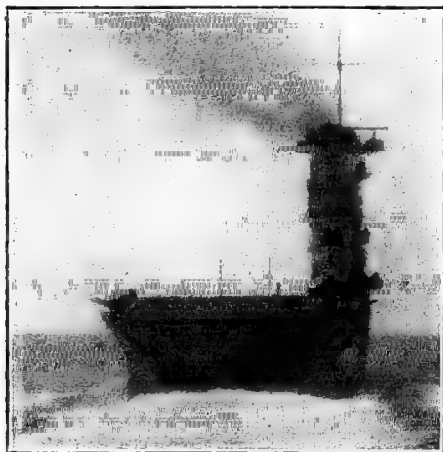
SARATOGA.

Photo, Nov., 1927. Topical.



SARATOGA.

1928 Photo, by favour of H. C. Bywater, Esq.



SARATOGA.

1928 Photo.



SARATOGA.

1928 Photo, by favour of H. C. Bywater, Esq.



SARATOGA.

1928 Photo, by favour of H. C. Bywater, Esq.

AIRCRAFT CARRIERS—FIRST LINE (CV).

Aircraft Carriers—U.S.A.



LANGLEY.

1925 Photo.

LANGLEY (ex-Fleet Collier *Jupiter*, 1912, launched Aug. 21th, 1912, converted 1920-21).

Displacement, { Normal, 12,700 tons. } Complement, 341 (excluding flying personnel).
Full load, tons.

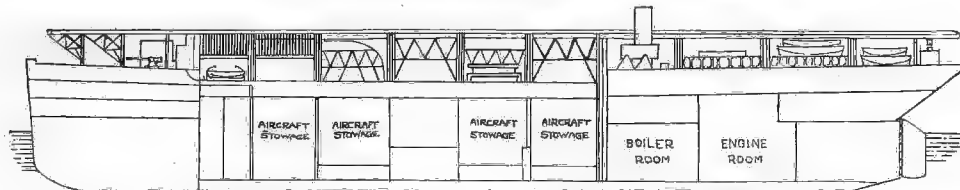
Length, { p.p. 520 feet. } Beam, 65 feet. Draught { Mean, 18 feet 10½ in. }
o.a. 54½ feet. Full load, feet.

Guns:

4—5 inch, 51 cal.
(Carries 275 bombs for aircraft,
also 24 torpedoes).

Armour:
Nil.

Note to Plan.—Now has 2 funnels, which are reported to be arranged
to lower as in Japanese *Hosho*.



Machinery.—G.E. turbines and electric drive. 2 screws. Boilers: 3 double-ended cylindrical and 1 auxiliary. S.H.P. (on first trials as Fleet collier) 7152 = 14.99 kts. Max. fuel capacity: oil only, 2300 tons.

Engineering Notes.—First large ship of U.S.N. built with electric drive and Melville-McAlpine reducing gear. This system of propulsion proved so successful, it has been adopted for Capital Ships. Two horizontal smoke ducts on port side with hinged extensions which can be lowered. Fitted with Sperry gyro-stabiliser.



Note.—Now has 2 funnels, as in 1st photo.

Photo added 1924.

W/T. Notes.—Masts stow flat along hangar deck. Auxiliary radio carried for communicating with 'planes when main W/T. masts are housed down.

Aircraft Capacity.—Maximum capacity reported as 55 planes, but at present carries:—

- (a) 12 single-seater chasing 'planes (3 hours endurance at 100 kts.).
- (b) 12 two-seater spotting 'planes (4 hours endurance at 100 kts.).
- (c) 4 torpedo-dropping 'planes (2 hours endurance at 100 kts.). (24 torpedoes carried for these).
- (d) 6 80-kt. torpedo-seaplanes.

Aircraft Stores, Repairs, &c.—For planes, all stores, spare parts, accessories, and magazines built for bombs, torpedoes, &c. Petrol capacity: 1130 tons, with elaborate plant for pumping petrol and lubricating oil to hangar and flying decks. Repair plant; machine shop; wing-repair shop; metal working shop; kite balloon filling station, etc.

Handling of Aircraft.—Original cargo holds altered to give max. space for housing 'planes. Runways below flight deck carry travelling cranes for hoisting 'planes from hold and moving them fore and aft, or to lifts for hoisting to flying deck. Electric lift raises 'planes from hangar to flying deck.

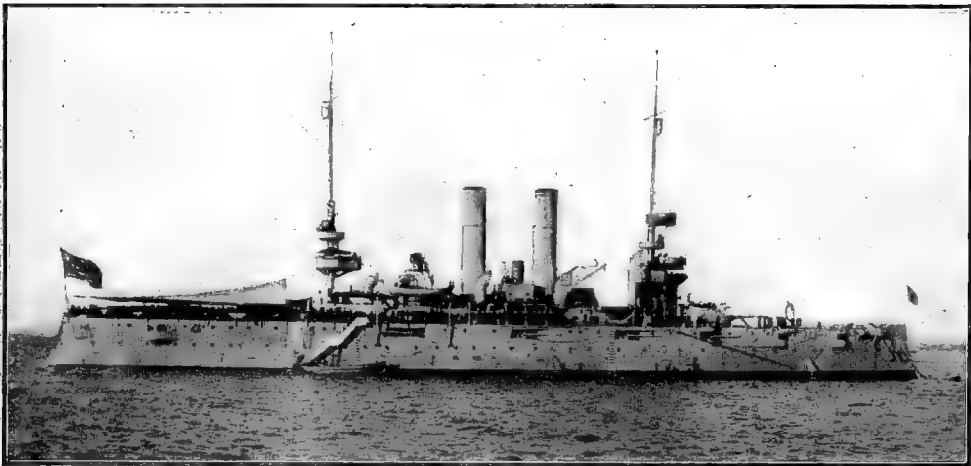
Flying-off.—Flight deck: 534 × 64 feet and 56 feet over w.l. Launching catapults fitted which can deliver torpedo planes into air at 60 m.p.h. with 60 feet run.

Flying-on and Landing Alongside.—Mantlets rigged to check speed. 2 cranes on each beam, with wide radii to pick seaplanes from water and place them on deck. Can receive planes at 60 m.p.h. and stop in 40 feet without injury to machine or pilot. It is considered safe for planes to alight on deck in a moderate sea.

General Notes.—Begun at Mare Island N. Yd., October, 1911, and completed as Fleet Collier, 1913. So served till March, 1920, when she was placed out of commission for conversion by Norfolk Navy Yd. For training purposes a complete and full-sized replica of LANGLEY'S flight deck, with landing net, has been erected at the Long Beach Aerodrome.

(See also Aircraft Tender on a later page.)

CRUISER—SECOND LINE (OCA).



(Fore funnel removed, 1927.) (Will be scrapped before long).

ROCHESTER (ex-Saratoga, ex-New York). (1891). (Reconstructed 1907-08 and 1927). Displacement: normal, 8150 tons^o; full load, 8900 tons. Complement, 648. Dimensions: 384 x 64³/₈ x 26¹/₂. Guns: 4—8 inch, 45 cal., 8—5 inch, 50 cal., 2—3 inch AA., 2—3 pdr. Armour (Harvey nickel): 4" Belt, 6" Deck (amidships); (Krupp) 6"—4" Barbettes, 6¹/₂" Turrets; 5" Hoists, 7" Conning tower. Boilers: 4 Babcock. Weight of machinery, 1317 tons. H.P. (estimated) 7700 = kts. Coal: 750—1100 tons. Authorised 1888. Laid down by Cramp, Philadelphia, Sept., 1890. Completed 1893. Originally had three funnels and 12 boilers.

* Including full supply ammunition and stores.

Light Cruisers—First Line (CL).

(AUGUSTA CLASS—11 SHIPS.)

AUGUSTA, CHESTER (July 3rd, 1929), **CHICAGO, HOUSTON, LOUISVILLE, NORTHAMPTON** and Nos 32—36.

Standard displacement, 10,000 tons. Complement, .
Length, 600 feet. Beam, 65 feet. Draught, 17 feet 7 inches.

Guns :
9—8 inch 55 cal.
4—5 inch AA.
Torpedo Tubes : 6. (No plan yet available.)

Armour :
" side
" deck

General Notes.—The first 6 were authorised 1926-27 under Act of Dec. 18th, 1924, as Nos. 26—31: the other 5 in 1928-29. Believed to be designed for 33 kts.

Name	Builders	Machinery	Laid down	Com- pleted	Trials
Augusta	Newport News Co.		1928	To be 1931	
Chester	Am. Brown Boveri Cpn.		1928		
Chicago	Mare Island Navy Yard		1928		
Houston	Newport News Co.		1928		
Louisville	Puget Sound Navy Yard		4/7/28	1932?	
Northampton	Bethlehem S.B. Co., Quincy		1928		
No. 32	New York Navy Yard				
No. 33	Bethlehem, Quincy				
No. 34	Puget Sound Navy Yard		1929		
No. 35	New York S.B. Co.				
No. 36	Philadelphia Navy Yard				

LIGHT CRUISERS—FIRST LINE (CL).

(PENSACOLA CLASS.)

PENSACOLA (April 25th, 1929), **SALT LAKE CITY** (Jan. 23rd, 1929).

Standard displacement, 10,000 tons. (Estimated normal displacement, 11,568 tons.)

Complement, 612.

Length (p.p.), 570 feet; o.a., 585¹/₂ feet. Beam, 64 ft.

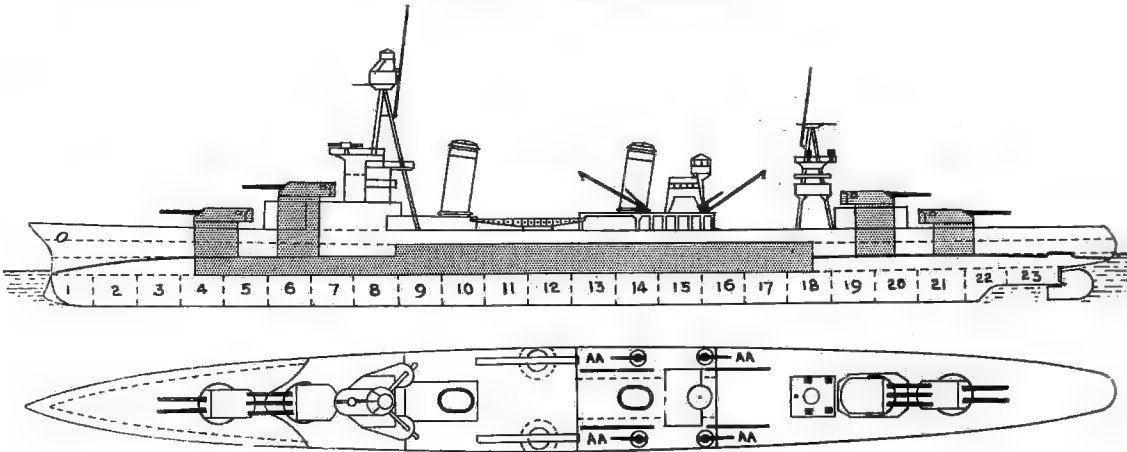
Mean draught (at normal displacement), 17 ft. 5 in.

Guns :
10—8 inch, 55 cal.
4—5 inch 25 cal. AA.
2—3 pdr.

Torpedo tubes (21 inch) : 6 (tripled).

Armour :
1¹/₂" side.
3" deck.
1¹/₂" gun houses.

Plan redrawn, 1929. (Note bulb-shaped bow.)



Parsons geared turbines. Designed S.H.P., 107,000 = 32.5 kts. (more expected). White-Forster boilers, working pressure reported as 300lbs. to square inch. 4 screws. Radius of action: 13,000 miles at 15 kts.

General Notes.—Laid down under Act of Dec. 18, 1924. Tons per inch immersion, 60.7.

Gunnery Notes.—It was originally proposed to arm these ships with 12—8 inch guns, sacrificing protection, ammunition supply and steaming radius to this end. Another proposal was to give them 8—8 inch guns, but the above armament was eventually fixed upon. As it is, these vessels will carry the heaviest armament of any cruisers designed under the Washington Treaty conditions.

Engineering Notes.—Heating surface, 107,000 square feet.

Name	Builders	Machinery	Laid down	Com- pleted	Trials
Pensacola Salt Lake City	New York N. Yd. Am. Brown Boveri Cpn.	Am. B. B. Cpn.	Oct. 1926 June 1927	To be 1930	

LIGHT CRUISERS—FIRST LINE (CL).

(OMAHA CLASS—10 SHIPS.)

OMAHA (Dec. 14th, 1920), **MILWAUKEE** (Mar. 24th, 1921), **CINCINNATI** (May 23rd, 1921), **RALEIGH** (Oct. 25th, 1922), **DETROIT** (June 29th, 1922), **RICHMOND** (Sept. 29th, 1921), **CONCORD** (Dec. 15th, 1921), **TRENTON** (April 16th, 1923), **MARBLEHEAD** (Oct. 9th, 1923), **MEMPHIS** (April 17th, 1924).

Normal displacement, 7500 tons; full load, 9000 tons. Complement, 458

Length (waterline), 550 feet; over all, 555½ feet. Beam, 55 feet. { Mean draught, 14' 3" }
{ Max. " " " }

Guns: (Dir. Con.)

12—6 inch, 53 cal. Mk. XII.

4—3 inch, 50 cal. AA.

2—3 pdr. (saluting)

Torpedo tubes (21 inch):

6 in two triple-deck mountings.

Mines carried:

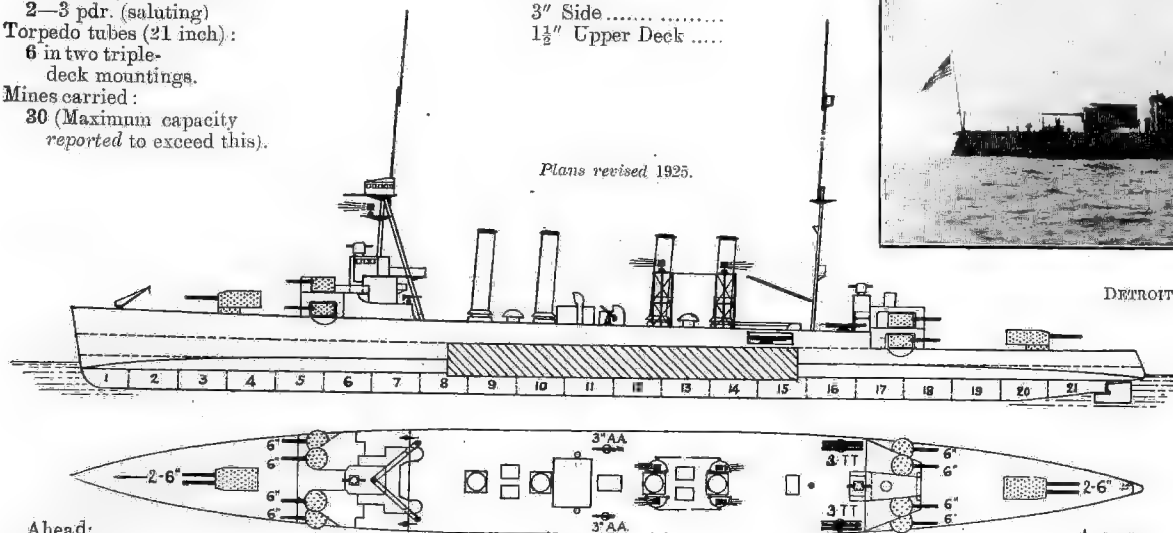
30 (Maximum capacity reported to exceed this).

Armour:

3" Side.....

1½" Upper Deck.....

Plans revised 1925.



Ahead:

6—6 inch.

Broadside: 8—6 inch.

Astern:

6—6 inch.

Machinery: Turbines (see Table for types), with reduction gears. Designed S.H.P. 90,000 = 33.7 kts. 4 screws. Boilers: see Table. Fuel: oil only; about 2000 tons (300,000 gallons). Radius of action: 10,000 miles at 15 knots. 7200 at 20 kts.

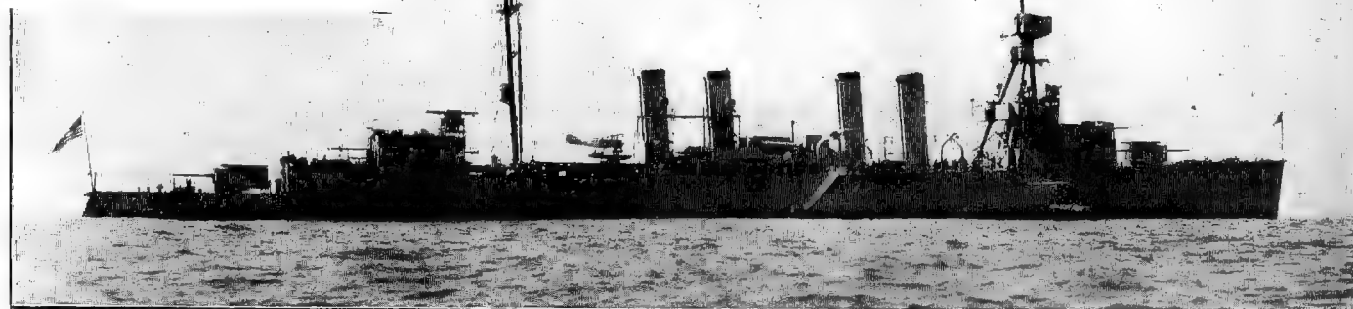
Name.	Built and Engine by	Laid down.	Completed.	Trials	Turbines.	Boilers	Heating Surface (sq. ft.)
Omaha	Todd Co., Tacoma	6 Dec. '18	Feb. '23	94,290 = 34.87	Westghs. Parson	12 Yarrow	90600
Milwaukee	" "	13 Dec. '18	June '23	90,060 = 34.64	"	12 Yarrow	
Cincinnati	" "	15 May '20	Dec. '23	94,290 = 34.44	"	12 Yarrow	
Raleigh	Bethlehem Co., Quincy	16 Aug. '20	Feb. '24	97,722 = 34.63	Curtis	12 Yarrow	90084
Detroit	" "	10 Nov. '20	July '23	97,375 = 34.63	"	12 Yarrow	
Richmond	" "	16 Feb. '20	June '23	95,000 = 34.2	Parsons	12 White-F	
Concord	" "	29 Mar. '20	Nov. '23	92,772 = 33.48	"	12 White-F	90840
Trenton	" "	18 Aug. '20	April, '24	"	"	12 White-F	
Marblehead	" "	4 Aug. '20	Sept. '24	95,950 = 34.24	"	12 White-F	
Memphis	" "	14 Oct. '20	Jan. '25	"	"	12 White-F	

General Notes.—Estimated cost (without guns) in 1916, five to six million dollars each; revised estimate 1919, 7½ million dollars each. Reported that in some cases even this has been exceeded by over a million dollars. Authorized (in order of names as given above) as Nos. 4—7 (1916), Nos. 8—10 (1916-17) and Nos. 11—13 (1916 and 1918). All were light on trials.

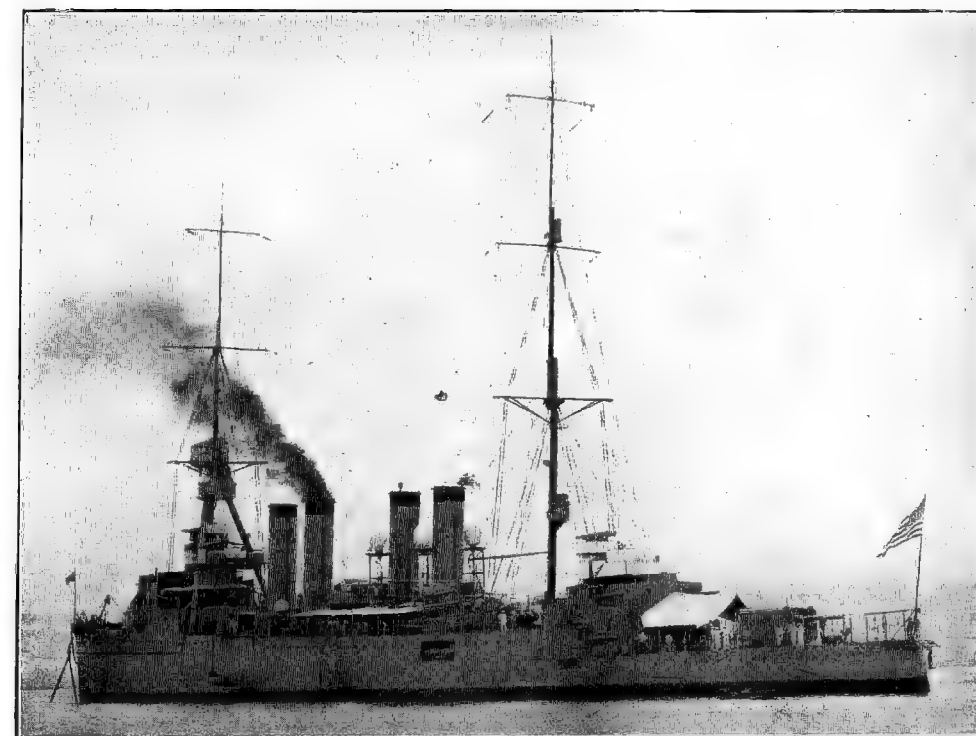
Gunnery Notes.—Originally designed with 8—6 inch guns. The "turrets" on forecable and quarter-deck are neither turrets nor barbettes in reality. The guns are not protected, but on either side of them is a light splinter-proof "shed" to protect gunlayers, sightsetters, etc. Loading party and ammunition supply do not appear to have any protection at all. There are 6 ammunition hoists, delivery rate 10 r.p.m. each. 3 inch AA. guns elevate up to 90°, and range up to 8200 yards.

Aircraft Notes.—2 Seaplanes stowed between 4th funnel and mainmast. 2 catapults fitted between 4th funnel and mainmast for launching planes, while running with, against or across wind. These catapults are of a new type in which a charge of powder is substituted for compressed air as a propellant. It is reported that planes can be thrown off by this means at a speed of 60 miles per hour.

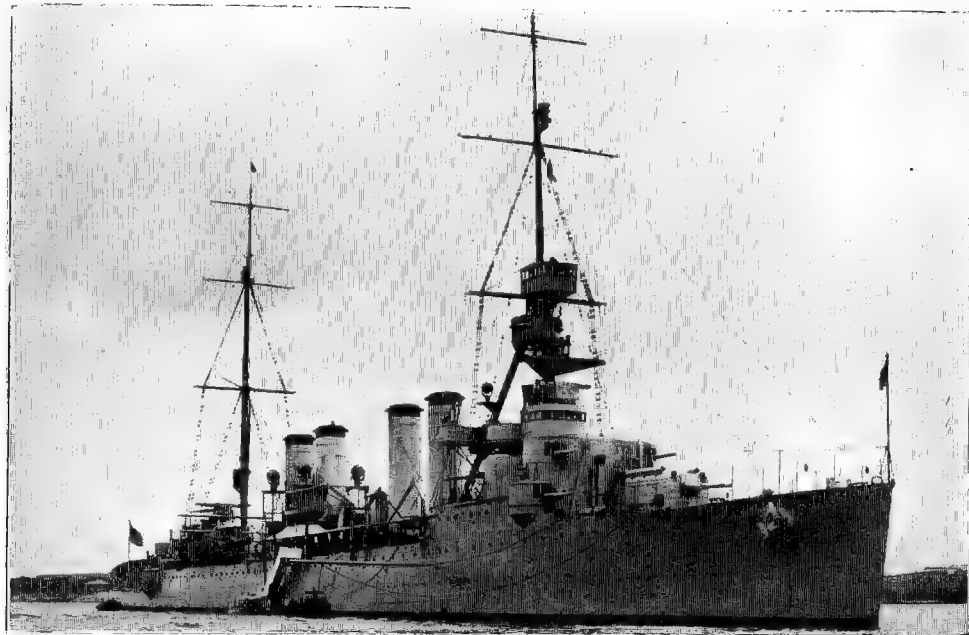
Engineering Notes. Curtis turbines of *Detroit* and *Raleigh* were modified in 1925 with the object of improving their efficiency.



1927 Photo, F. J. Parsons, Esq.

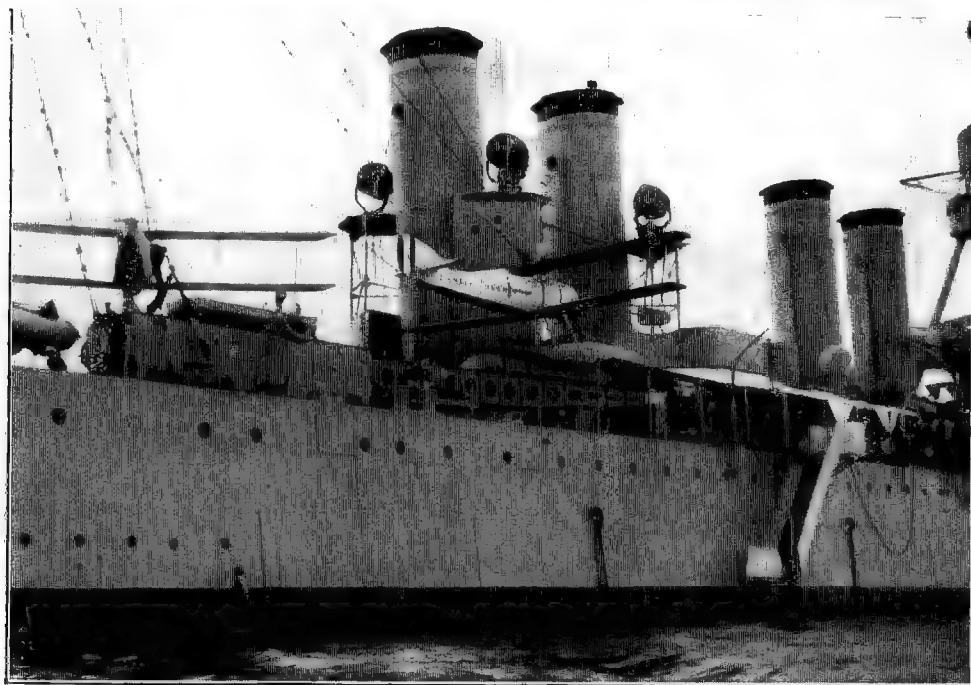


OMAHA.



RALEIGH.

1929 Photo, R. Perkins, Esq.



MEMPHIS, showing starboard catapult and plane.

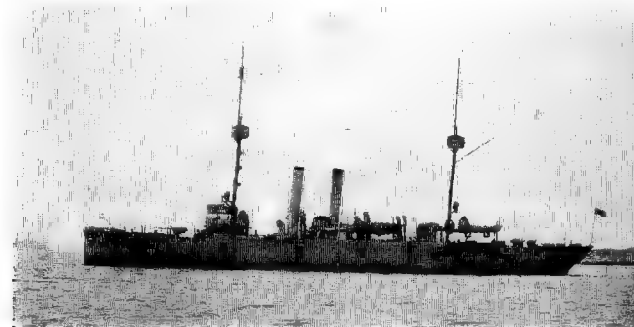
Photo added 1927.

Special Note.

The following obsolete cruisers have been deleted from this edition:—

On Sale List, August 1929 : *Frederick, Huron, Huntington, Pueblo, Charleston, St. Louis, New Orleans, Albany, Birmingham, Salem, York, Chattanooga.*

Since condemned : *Olympia* (to be used as a floating museum), *Pittsburgh, Pueblo, Charlotte, Seattle, Cleveland, Des Moines* (all six to be sold).



(Galveston, no top on main mast).

1920 Photo, Freund, Brest.

(DENVER CLASS—2 SHIPS.)

DENVER (June, 1902), **GALVESTON** (July, 1903). (Wood sheathed and coppered). Normal displacement, 3,200 tons. Complement, 279 to 308. Dimensions : 309 (o.a.) 292 (p.p.) \times 44 \times 17 feet. Guns (model 1899) : 8—5 inch, 50 cal., 1—3 inch AA., 6—6 pdr. Armour (Harvey-nickel) : 2½" Deck (on slopes), ¾" (flat). Designed H.P. 4,500 = 16.5 kts. 2 screws. Coal : 167-740 tons = 7,000 miles at 10 kts. nominal.

Note.—*Tacoma* of this class wrecked off Vera Cruz, February, 1924 ; *Chattanooga, Cleveland, Des Moines*, removed from effective list (see notes above).



MEMPHIS.

1928 Photo.

270* DESTROYERS.—TABULATED DETAILS.

Destroyers—U.S.A.

*This total excludes 25 transferred to Coast Guard, which would be available for naval service in the event of war. 12 boats authorised (Nos. 348–359), but not under contract or construction, are excluded, as they cannot be commenced at present. It has been proposed to build 4 Flotilla Leaders of 1800 tons displacement in lieu of some of these, but nothing appears to have been decided.

In November, 1929, it was decided that 57 Destroyers which are not considered to be worth the cost of refit should be sold for scrap. This will reduce above total to 213.

Series No.	Total No.	Class.	First begun.	Last completed	Displacement.	Dimensions. Length × Beam × Mean draught.	Designed H.P. } = kts. speed.	Mar. Fuel.	Guns. AA = Anti-Aircraft.	Torpedo tubes.	Complement. Peace/ War
		FIRST LINE:—			tons.			tons.			
“#186—347”	3	<i>Bath I. W.*</i>	1918	1920	1215	310 × 30'—10" × 9½	{ 27,000 <i>t</i> — 25,000 <i>t</i> } = 35½	375 ?	{ 4—4 inch (50 cal.) 1—3 inch AA. }	12—21 inch	122/139
	20	<i>N. Y. S. B. Co.*</i> . .	1918	1920	1215						
	125	<i>Various Yards*</i> . .	1918	1921	1215						
“#75—185”	11	<i>Newport News*</i> . .	1917	1919	1213	310 × 30'—10" × 9	{ 27,000 <i>t</i> — 24,200 <i>t</i> } = 35½	290 ?	{ 4—4 inch (50 cal.) 1—3 inch AA. }	12—21 inch	122/139
	9	<i>N. Y. S. B. Co.*</i>	1917	1919	1211						
	38	{ <i>Fore River*</i> <i>Union I. W.*</i> }	1917	1919	1191						
	21	<i>Cramp*</i>	1917	1919	1154						
	16	{ <i>Bath I. W.*</i> <i>Navy Yards*</i> }	1917	1919	1154						
“#69—74”	6	<i>Caldwell</i>	1916	1917	1125	310 × 30'—8" × 8	{ 18,500 <i>t</i> = 30 20,000 <i>t</i> = 32 }	260 oil ?	{ 4—4 in. (50 cal.) 1—3 inch AA. }	12—21 inch	122/139
“#63—68”	3	<i>Allen</i>	1915	1917	1110	310 × 29½ × 9½	17,000 <i>t</i> = 29.5	290 oil ?	{ 4—4 inch (50 cal.) 2—3 inch AA. }	12—21 inch	103/136
“#57—62”	1	<i>Wadsworth</i>	1914	1915	1069	310 × 29½ × 9½	17,000 <i>t</i> = 29.5	305—310 oil	{ 4—4 inch (50 cal.) 1—3 inch AA. }	8—21 inch	106/132
“#51—56”	4	<i>Cushing</i>	1913	1915	1050	300 × 30½ × 9½	16,000 <i>tr</i> = 29	307—311 oil	{ 4—4 inch (50 cal.) 1—3 inch AA. }	8—21 inch	106/133
“#43—50”	5	<i>Austin</i>	1912	1915	1040					8—18 inch	
		SECOND LINE:—									
“#22—42”	8	<i>Drayton</i>	1909	1912	742	289 × 26½ × 8½	12,000 <i>t</i> = 29½	222—238 oil	{ 5.3 inch in 4 boats 4.3 inch in 4 boats }	6—18 inch	86/107

In above Table, displacements and dimensions are generally the average for each class. Dates refer to time first boat of class was begun and the last boat commissioned for service. Launching dates are given in description by classes on subsequent pages. In H.P. column, *t* = turbines, *tr* = turbines combined with reciprocating engines.

*Classified by Building Yards. †Many did not attain this speed on trials. §4—5 inch guns in 5 “N.Y./S.B. Co.” boats and 130/—as complement. 2 of the “125 Various Yard” boats have 8—4 inch and 134/—as complement.

U.S.A.—Destroyers.

FLUSH DECK DESTROYERS—FIRST LINE (DD).

184 ABBOT 1	222 BULMER 2	152 DU PONT 2	231 HATFIELD 6	263 LAUB 5	105 MUGFORD 10	190 SATTERLEE 1	182 THOMAS 1
211 ALDEN 2	299 BURNES, JOHN FRANCIS 9	84 DYER 7	107 HAZELWOOD .. 10	315 LA VALLETTE 9	325 MULLANY 9	159 SCHENCK 6	305 THOMPSON ... 9
258 AULICK 4	166 BUSH 7	219 EDSALL 2	278 HENSHAW 5	250 LAWRENCE ... 6	343 NOA 11	103 SCHLEY 10	212 THOMPSON, SMITH 2
294 AUSBURN, CHARLES 5	69 CALDWELL ... 3	265 EDWARDS 5	160 HERBERT 5	118 LEA 2	177 O'BANNON ... 10	320 SELFRIDGE ... 9	270 THORNTON ... 5
128 BABBITT 6	285 CASE 5	216 EDWARDS, JOHN D. 2	198 HERNDON 1	158 LEARY 6	295 OSBORNE 5	189 SEMMES 1	135 TILLMAN 13
126 BADGER 6	104 CHAMPLIN 10	146 ELLIOT 2	178 HOGAN 10	336 LITCHFIELD .. 8	239 OVERTON 6	281 SHARKEY 5	272 TINGEY 5
196 BADGER, GEORGE F... 1	206 CHANDLER ... 2	154 ELLIS 2	181 HOPEWELL ... 1	79 LITTLE 7	161 PALMER 7	318 SHIRK 9	282 TOUCEY 5
185 BAGLEY 1	323 CHASE 9	78 EVANS 3	249 HOPKINS 6	209 LONG 2	218 PARROTT 2	268 SHUBRICK 5	214 TRACY 2
269 BAILEY 5	106 CHEW 10	93 FAIRFAX 8	208 HOVEY 2	331 MACDONOUGH . 9	238 PAULDING, JAMES K. ... 6	346 SICARD 3	339 TREVER 8
246 BAINBRIDGE .. 6	241 CHILDS 6	332 FARENHOLT ... 9	179 HOWARD 10	175 MACKENZIE ... 10	226 PEARY 2	81 SIGOURNEY ... 7	229 TRUXTUN 2
267 BALLARD 5	140 CLAXTON 8	304 FARQUHAR ... 9	342 HULBERT 11	220 MACLEISH 2	298 PERCIVAL 9	221 SIMPSON 2	259 TURNER 4
256 BANCROFT 4	186 CLEMONSON ... 1	300 FAREAGUT ... 9	330 HULL 9	168 MADDOX 7	340 PERRY 8	275 SINCLAIR 5	127 TWIGGS 6
213 BARKER 2	326 COGHLAN 9	289 FLUSSER 5	236 HUMPHREYS .. 6	74 MANLEY 3	76 PHILIP 3	316 SLOAT 9	144 UPSHUR 2
149 BARNEY 2	155 COLE 2	169 FOOTE 7	194 HUNT 1	321 MARCUS 9	227 PILLSBURY ... 2	324 SMITH, ROBERT 9	193 UPSHUR, ABEL P. 1
248 BARRY 6	85 COLHOUN 7	228 FORD, JOHN D. 2	255 INGRAM, OSMOND ... 4	191 MASON 1	225 POPE 2	301 SOMERS 9	163 WALKER 7
251 BELKNAP 4	72 CONNER 2	234 FOX 6	284 ISHERWOOD ... 5	253 MCCALLA 4	345 PREBLE 3	207 SOUTHARD 2	139 WARD 8
95 BELL 7	291 CONVERSE ... 5	123 GAMBLE 1	245 JAMES, REUBEN 6	276 MCCAWLEY ... 5	327 PRESTON 9	180 STANSBURY ... 10	132 WARD, AARON. 3
153 BERNADOU ... 2	334 CORRY 9	260 GILLIS 4	130 JONES, JACOB . 6	252 MCCOOK 4	344 PRESTON, WILLIAM B. 11	86 STEVENS 7	338 WASMUTH 8
151 BIDDLE 2	167 COWELL 7	233 GILMER 6	230 JONES, PAUL . 2	223 MCCORMICK .. 2	347 PRUITT 3	224 STEWART 2	115 WATERS 2
293 BILLINGSLEY . 5	109 CRANE 10	247 GOFF 6	308 JONES, WILLIAM ... 9	262 McDERMUT ... 5	287 PUTNAM 5	73 STOCKTON 2	257 WELLES 4
150 BLAKELEY ... 2	70 CRAVEN 11	188 GOLDSBOROUGH 1	170 KALK 7	237 McFARLAND .. 6	120 RADFORD 1	302 STODDERT 9	217 WHIPPLE 2
136 BOGGS 8	164 CROSBY 7	266 GREENE 5	235 KANE 6	90 McKEAN 10	124 RAMSAY 1	83 STRINGHAM ... 7	75 WICKES 3
215 BORIE 2	134 CROWNINSHIELD 3	145 GREER 2	306 KENNEDY 9	87 McKEE 10	113 RATHBURNE... 2	333 SUMNER 9	108 WILLIAMS 10
197 BRANCH 1	187 DAHLGREN ... 1	82 GREGORY 7	138 KENNISON 8	264 MEADE 5	292 REID 5	273 SWASEY 5	244 WILLIAMSON .. 6
283 BRECK 5	290 DALE 5	92 GRIDLEY 10	319 KIDDER 9	335 MELVIN 9	303 RENO 9	114 TALBOT 2	317 WOOD 9
148 BRECKINRIDGE 2	199 DALLAS 1	71 GWIN 12	137 KILTY 8	165 MEREDITH ... 7	176 RENSHAW 10	156 TALBOTT, J. FRED 2	195 WOOD, WELBORN C. 1
122 BRESEE 1	341 DECATUR 8	133 HALE 3	80 KIMBERLY ... 7	322 MERVINE 9	89 RINGGOLD 10	142 TARBELL 2	288 WORDEN 5
232 BROOKS 6	116 DENT 2	141 HAMILTON 8	242 KING 6	279 MEYER 5	88 ROBINSON 10	125 TATTNALL 6	314 YARBOROUGH . 9
210 BROOME 2	157 DICKERSON ... 6	307 HAMILTON, PAUL 9	119 LAMBERTON .. 1	121 MONTGOMERY . 1	254 RODGERS 4	94 TAYLOR 8	143 YARNALL 2
329 BRUCE 9	117 DORSEY 2	183 HARADEN 1	328 LAMSON 9	277 MOODY 5	147 ROPER 2	162 THATCHER 7	337 ZANE 8
131 BUCHANAN ... 3	280 DOYEN 5	91 HARDING 10	286 LARDNER 5	271 MORRIS 5	243 SANDS 6		313 ZEILIN 9

Numerals preceding name are the Official Number which is painted on the bows of each boat.

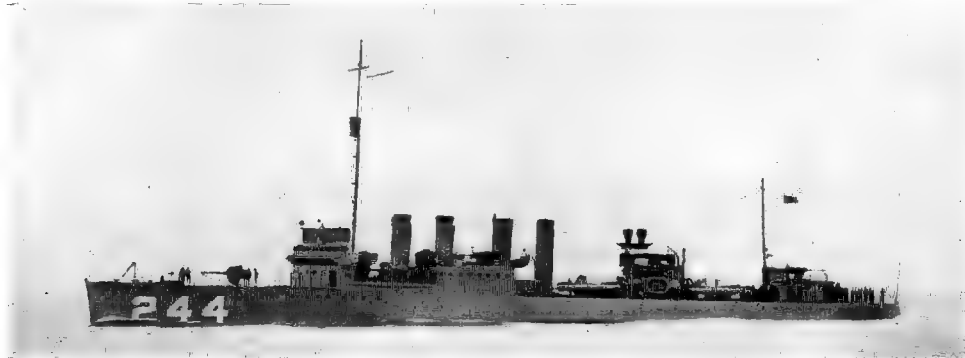
Number after name = Builder's Name (see list).

Builders:—

- 1 Newport News S.B. Co.
- 2 Wm. Cramp & Sons.
- 3 Bath Iron Works.
- 4 Bethlehem S.B. Co., Quincy.
- 5 " " Squantum.

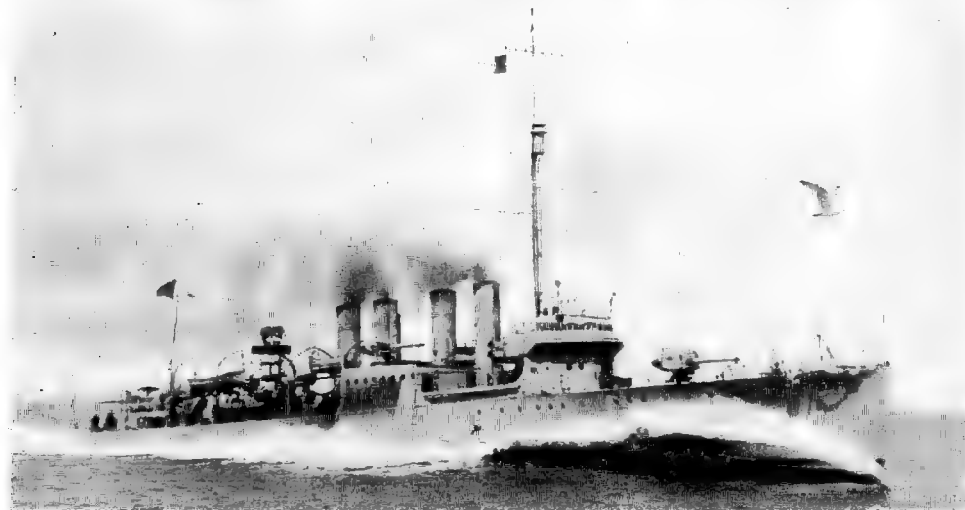
- 6 New York S.B. Co.
- 7 Fore River S.B. Co.
- 8 Navy Yard, Mare Island.
- 9 Bethlehem S.B. Co., San Francisco.

- 10 Union Iron Works.
- 11 Navy Yard, Norfolk.
- 12 Seattle Con. and D.D. Co.
- 13 Navy Yard, Charleston.

249 boats by various yards (Flush Deckers—"186 Series.")

WILLIAMSON and boats Nos. 186—347 series.

Photo, 5th March, 1921. Gieres, Ltd.



BROOKS.

1920 Photo, by courtesy of Builders.

General Notes.—Normal displacement: 1215 tons (1308 full load). Dimensions: 310 (v.l.), 314 ft. 4 in. (o.a.) × 30 ft. 11½ in. × 9 ft. 4 in. mean draught, 9 ft. 10 in. full load. Armament: 4—4 inch, 50 cal., 1—3 inch, 23 cal. A.A., 12—21 inch tubes in 4 triple deck mountings. Oil fuel: 375 tons. Complement, 122. In these boats the after 4 inch gun is on deck-house and the A.A. gun is on quarter deck—a modification which will be effected in all other "Flush Deck" destroyers. 16 D.C. carried in some.

° 8—4 inch in Honey (208), Long (209); 4—5 inch in Brooks (232), Fox (234), Gilmer (233), Hatfield (231), and Kane (235). 5—4 inch in Semmes (189).

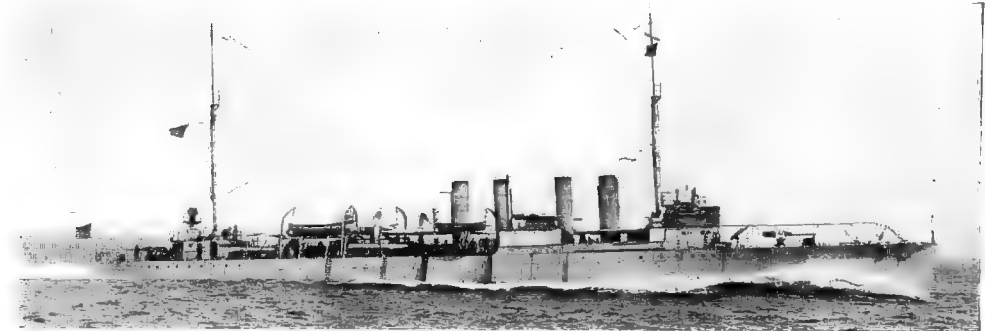
Designed S.H.P. 26,000—27,000 = 35 kts. Parsons, Westinghouse or Curtis turbines. 2 Screws. 4 Normand, Yarrow or White-Forster boilers.

Curtis-engined boats. Oil consumption: 280-290 gallons at 16 kts., over 1000 gallons at full speed. Can get up steam in less than 20 minutes if required, and can manage 5 kts. under exhaust steam only. R.P.M., 181 for 16 kts., 465 for 35 kts.

HOVEY & LONG HAVE TWIN 4 INCH MOUNTS.
BROOKS CLASS HAVE 5 INCH GUNS

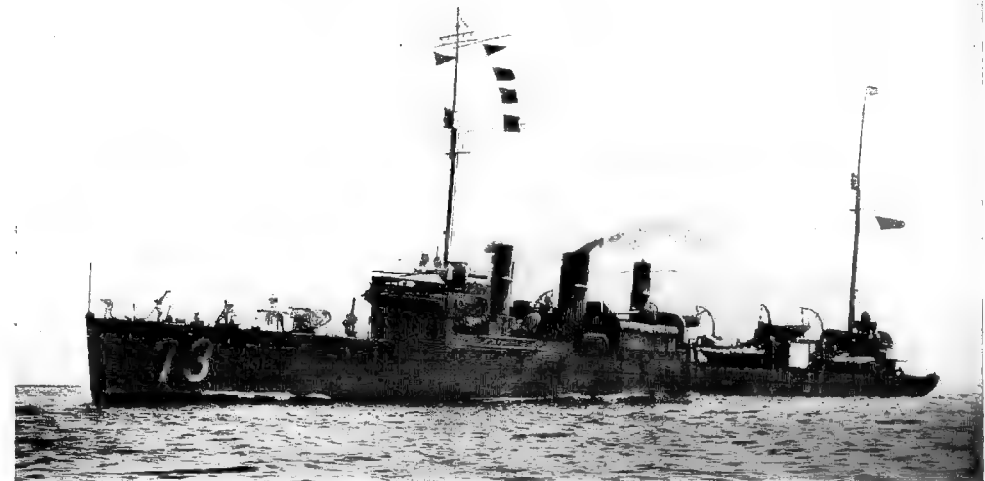


Nos 186 TO 347.



HERBERT, and boats Nos. 75—185 series.

1920 Photo, by courtesy of Builders.



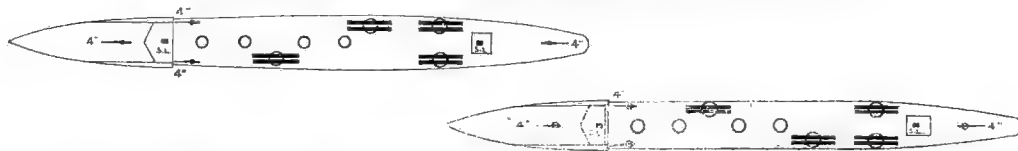
STOCKTON (CONNER & GWIN similar).

1919 Photo.

Oil fuel supply is about 288—294 tons in earlier boats # 75 series.

3 Allen class.

Note.—*Davis, Shaw and Wilkes*, of this class, have been transferred to Coast Guard.



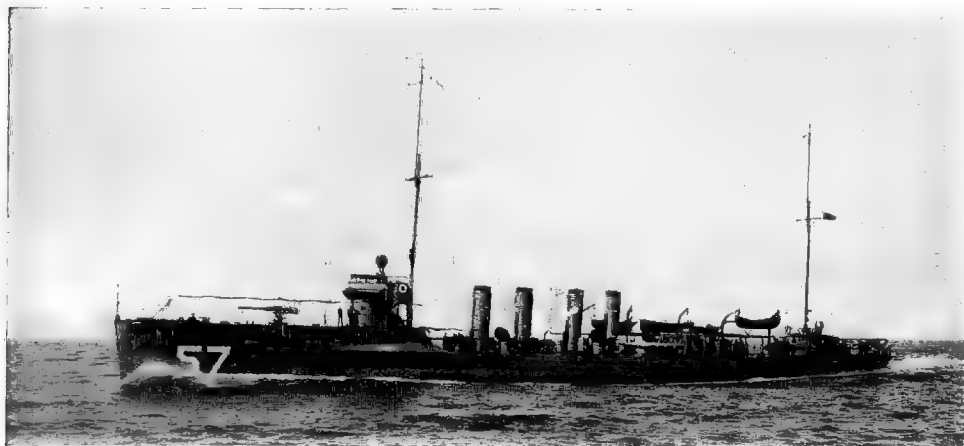
1 *Bath I.W.*: **Allen** (1916). 1071 tons (1185 full load). Designed H.P. 17,500 = 30 kts. Parsons geared (cruising on port shaft only) turbines. Machinery weighs 320 tons. Boilers: 4 Normand—22,500 sq. ft. heating surface. Trials: 30.29 kts.

2 *Fore River*: **Rowan** (1916), **Sampson** (1916). 1111 tons (1225 full load). Designed H.P. 17,000 = 29.5 kts. Curtis geared (cruising on both shafts) turbines. Machinery averages 385 tons. Boilers: 4 Yarrow—21,500 sq. ft. heating surface. Trials: *Rowan*, 29.57 kts.; *Sampson*, 29.52 kts.

General Notes.—Dimensions: 310 (w.l.) × 29½ × 9½ feet mean draught. Full load draught of first one: 9 ft. 9 in. Others, 10 ft. 9 in. Armament: 4—4 inch (50 cal.), 1—3 inch anti-aircraft, 12—21 inch deck tubes in 4 triple deck mountings. Designed H.P. 17,000 = 29.5 kts. Oil fuel: 290 tons (estimated). Complement: 122/136 war. Authorized 1914 as "Nos. 63—68."

1 Wadsworth Class.

Note.—Remaining boats of this class (*Conyngham, Porter, Wainwright, Tucker*) have been transferred to Coast Guard.



1919 Copyright Photo, O. W. Waterman.

1 *Bath I.W.*: **Wadsworth** (1915). 1060 tons (1174 full load). Designed H.P. 17,000 = 29½ kts. Parsons geared turbines. Machinery weighs 323 tons. Boilers: 4 Normand—21,500 sq. ft. heating surface. Oil: 310 tons. Trials: 30.67 kts.

General Notes.—Dimensions: 310 (w.l.) × 29½ × 9½ feet (mean draught). Full load draught 10 feet to 10 feet 8½ inches. Armament: 4—4 inch (50 cal.), 1—3 inch AA., 8—21 inch tubes in 4 twin-deck mountings. Designed H.P. 17,000 = 29.5 kts. Unofficial endurance figures: 5640 miles at 14 kts. Complement: 106-109 (132 war). Authorized 1913 as "Nos. 57—62," *Jacob Jones* (No. 61) being a War Loss.

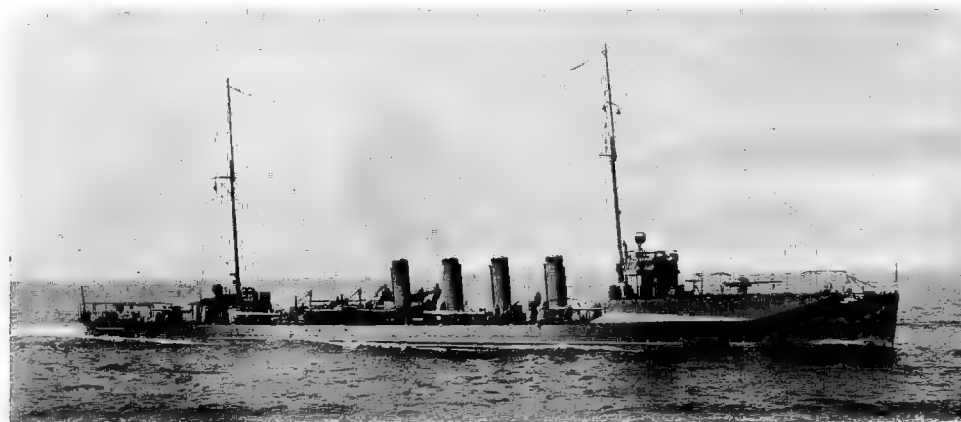


SAMPSON.

1919 Photo, O. W. Waterman.

4 Cushing Class.

Note.—*Ericsson and McDougal*, of this class, transferred to Coast Guard.



NICHOLSON.

1919 Copyright Photo, O. W. Waterman.

1 *Fore River*: **Cushing** (1915). 1050 tons (1171 full load). Curtis (geared cruising) turbines. Machinery weighs 360 tons. Boilers: 4 Bureau Modified Yarrow—21,500 sq. feet heating surface. Trials: 29.18 kts.

3 *Cramp*: **Nicholson** (1914), **O'Brien*** (1914), **Winslow** (1915). 1050 tons (1171 full load). 2 Cramp-Zoelly turbines with 2 reciprocating. Machinery weighs 351 tons. Boilers: 4 White-Forster—21,600 sq. feet heating surface. Trials: *Nicholson* 29.08 kts., *O'Brien* 29.16 kts., *Winslow* 29.05 kts.

General Notes.—Dimensions are about 300 (w.l.) × 30½ × 9 feet 4 inches to 9 feet 8 inches (mean). Full load draught: 9 feet 8 inches to 10 feet 9 inches. Armament: 4—4 inch (50 cal.), 1—3 inch AA., 8—21 inch tubes in 4 twin-deck mountings. Designed H.P. 16,000 = 29 kts. Oil fuel: 305 to 311 tons. Complement: 104-106 (war 132). Built to guaranteed radius at 15 kts. Authorized 1912 as "Nos. 51—56."

* Has very low mainmast.

(Continued on next page.)

5 Aylwin Class.

(Unofficially known as "Thousand Tonners.")

Note.—*Cassin, Cummings* and *Downes*, of this class, transferred to Coast Guard.



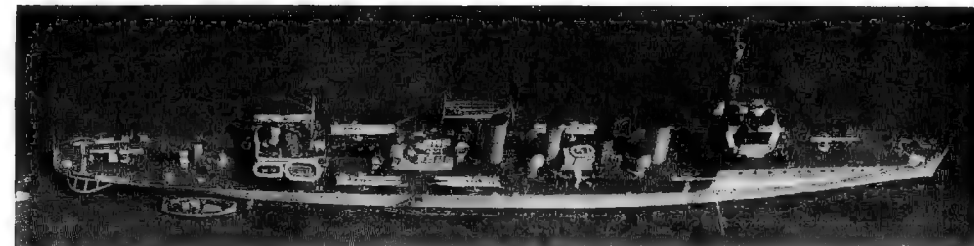
DUNCAN.

1919 Copyright photo, O. W. Waterman.

4 *Cramp*: **Aylwin, Balch, Benham, Parker** (1913). 1036 tons (1156 full load). Cramp-Zoelly turbines and reciprocating engines. Machinery: 347 tons. Boilers: 4 White-Forster—21,600 sq. feet heating surface. Oil fuel: *Aylwin*, 307 tons; *Balch*, 306 tons; *Benham*, 311 tons; *Parker*, 317 tons. Trials: *Aylwin* 29.6, *Balch* 29.62, *Benham* 29.59, *Parker* 29.55 kts.

1 *Fore River*: **Duncan** (1913). 1014 tons (1133 full load). Curtis turbines and reciprocating engines. Weight: 348 tons. Boilers: 4 Yarrow—21,500 sq. feet heating surface. Oil fuel: 303 tons. Trials: 29.14 kts.

Note.—Dimensions about 300 (w.l.) × 30½ × 9½ to 9¾ (mean). Full load draught 10½ to 10¾ feet. Designed H.P.: 16,000=29 kts. Armament: 4—4 in. (50 cal.). 1—3 in. A.A., 8—18 in. tubes in four twin-mountings. Complement 122, War 134. Built to specified radius at 15 kts. Reciprocating engines not used over 15 kts. Very economical steamers. Authorized 1911 as "Nos. 43—50."



BENHAM (*Aylwin* class).
Aircraft view showing disposition of guns and T.T. Note stump mainmast.

1920 Photo.

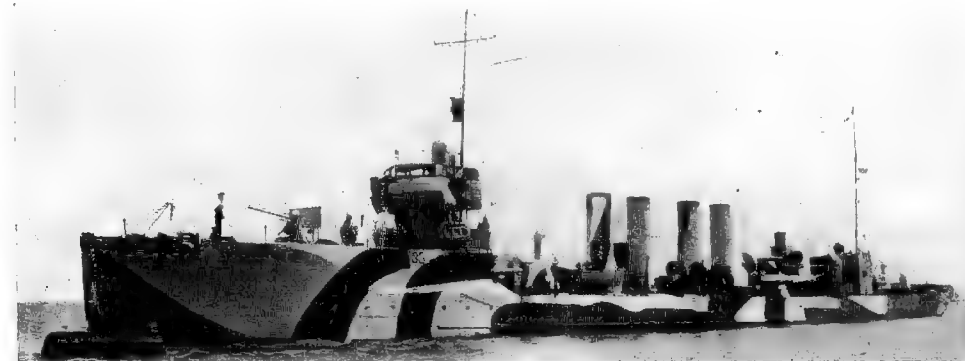
Destroyers—Second Line (ODD).

8 Drayton Class.

Note.—*Jouett, Trippe, Paulding, Anmen, Burrows, McCall, Beale, Patterson, Henley, Fanning, Monaghan, Roe, Terry*, of this class, transferred to Coast Guard.

All 742 tons (883.893 full load). Dimensions: 239 (w.l.) × 26½ × 8½ feet (mean). Armament: 5—3 inch 50 cal.; 6—18 inch tubes (in pairs). Designed H.P. 12,000 = 29½ kts. Full load draught, from 9 ft. 5 in. to 10 ft. 1 in. Complement 86, war 107. Authorized 1908 (10 boats), 1909 (5 boats), 1910 (6 boats), as "Nos. 22—42."

§ This is authorised battery, but guns are not on board at present. *Sterett, Warrington*, have only 4—3 inch 50 cal.



1919 Photo.

2 *Bath I.W.*: **Drayton** (1910), **Jenkins** (1912). Machinery: Parsons turbines. Weight of machinery: 263 tons. Boilers: 4 Normand. Oil fuel: *Drayton*, 227 tons; *Jenkins*, 222 tons. Trials: *Drayton*, 30.83; *Jenkins*, 31.27 kts.

DRAYTON.



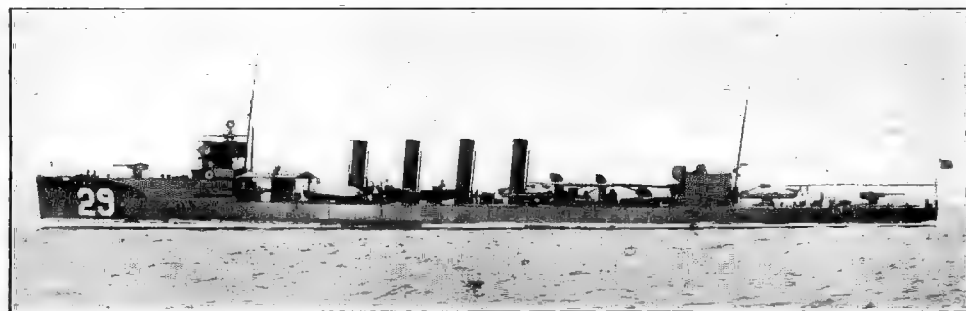
Note—*Sterett, Warrington*, 4—3 inch only. In a few boats T.T. are between second and third funnels.

(Continued on next page.)

U.S.A.—Destroyers and Light Mine Layers. DESTROYERS—SECOND LINE (ODD) AND LIGHT MINE LAYERS.

(General details given on preceding page.)

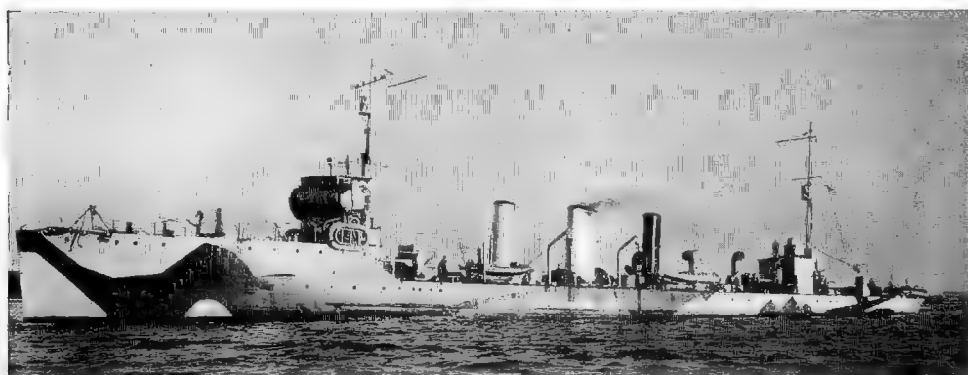
8 Drayton class—continued.



1924 Official Photo.

1 *New York S. B. Co.*: **Jarvis** (1912). Parsons turbines.* 3 screws. Machinery: 296 tons. Boilers: 4 Thornycroft. Oil fuel: 223 tons. Trials: 30.01 kts.

*Geared cruising.



PERKINS (Walke and Sterett similar).

1920 Photo.

3 *Fore River*: **Perkins** (1910), **Sterett** (1910), **Walke** (1910). Curtis turbines (300 tons). 2 screws. Boilers: 4 Yarrow. Oil fuel: *Walke*, 238 tons; others, 230 tons. Trials: *Perkins*, 29.76; *Sterett*, 30.37; *Walke*, 29.78 kts.

No photo.
Have three funnels like Perkins.

MAYRANT, WARRINGTON.

2 *Cramp*: **Mayrant** (1910), **Warrington** (1910). *Mayrant* re-engined 1916-17 with Westinghouse turbines and mechanical reduction gear (284 tons). *Warrington* has Cramp-Zoelly turbines. 2 screws. Weight of machinery: 283 tons. Boilers: 4 White-Forster. Oil fuel: 236 tons. Trials: *Mayrant*, 30.22; *Warrington*, 30.12 kts.

14 Light Mine Layers—DM.

(ex-Flush Deck Destroyers of " # 75 Series.")



MAHAN.

1921 Photo.



LANSDALE.

1921 Photo.

7 *Fore River*: **Israel**, **Lansdale**, **Luce** (ex-Schley), **Mahan**, **Maury**, **Murray**, **Stribling**. (Are ex-Destroyers Nos. 96—102; authorized 1917.)

7 *Union I. W.*: **Anthony**, **Burns**, **Hart**, **Ingraham**, **Ludlow**, **Rizal**, **Sproston**. (Are ex-Destroyers Nos. 110—112, 171—174; authorized 1917.)

Displacements: 1191 tons *normal* (1284 *full load*). Dimensions: 310 (w.l.), 314 ft. 4 in. (o.a.) × 30 ft. 11½ in. × 9 ft. 2 in. (*mean draught*), 9 ft. 10 in. (*full load draught aft*).

Guns: 4—4 inch, 50 cal. 1—3 inch. 23 cal. A.A.

Torpedo tubes: Removed on conversion.

Mines carried: Unofficially reported to carry 80 Mark IV mines, for which magazines, deck rails and chutes have been fitted.

Machinery (*about* 486 tons): Curtis geared turbines. 4 Yarrow boilers—27,540 sq. ft. heating surface. 2 screws. Designed S.H.P. 27,000 = 35 kts. (only *Lansdale* and *Mahan* made this *on trials*). Fuel: 283 tons oil. Complement, 128.

Notes.—Flush Deck Destroyers converted 1920-21. *Israel* has submarine bell. *Rizal* built at expense of Philippine Government, and manned by Filipino crew.

FORE RIVER BOATS:—

Name.	Begun.	Launch.	Comp.
<i>Israel</i>	26/1/18	22/6/18	13/9/18
<i>Lansdale</i> ..	20/4/18	21/7/18	26/10/18
<i>Luce</i>	9/2/18	29/6/18	11/9/18
<i>Mahan</i>	4/5/18	4/8/18	24/10/18
<i>Maury</i>	26/2/18	4/7/18	23/9/18
<i>Murray</i>	22/12/17	8/6/18	20/8/18
<i>Stribling</i> ..	14/12/17	29/5/18	16/8/18

UNION I. W. BOATS:—

Name.	Begun.	Launch.	Comp.
<i>Anthony</i> ..	18/4/18	10/8/18	19/6/19
<i>Burns</i>	15/4/18	4/7/18	7/8/19
<i>Hart</i>	8/1/18	4/7/18	26/5/19
<i>Ingraham</i> ..	12/1/18	4/7/18	15/5/19
<i>Ludlow</i>	7/1/18	9/6/18	23/12/18
<i>Rizal</i>	26/6/18	21/9/18	28/5/19
<i>Sproston</i> ..	20/4/18	10/8/18	11/7/19

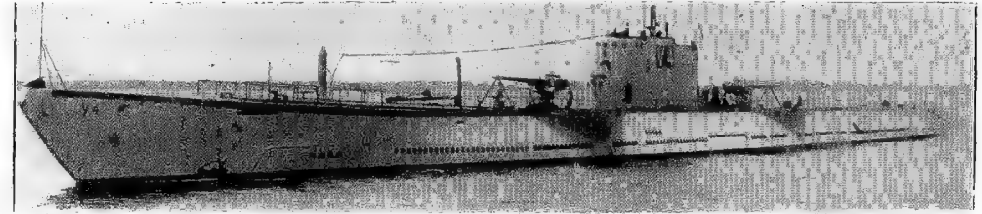
122 (+ 2 bldg. + 4 authorised) Submarines.

(Details officially revised, 1929.)

No.	Class and Type (Design)	Authorized	Built	Displacement	H.P.	Max. speed	Fuel or Battery Endurance.	Complement	T. Tubes
				tons		kts.			
3	Fleet : V7, V8, V9 Projected	16, '18	...	...	...	...	...	...	...
2	V5, V6 (BD)	16, '24	'25-'30	2760*	5447	...	...	88	6
1	V4 (BD)			2680*	3175	17	...	86	4
3	VI-V3 (BD)	16, '18	'21-'26	2119	6,500	21	10,000 miles at 11 kts.	86	6
3	{ T2, T3 (H) T1 (H) }	'15, '16 1914	'17-'22 '16-'20	1106 1487	4000-4700 1520	20.0 11.0	For 7000-9000 miles	54	6
1	First Line: Projected	16, '18	...	...	...	...	...	...	...
4	S 48-S 51 (BD)	16, '18	'19-'22	993 1230	2000 1500	14.5 11	...	38	5
6	S 42-S 47 (H)	16, '18	'20-'25	906 1126	1200 1500	14.5 11	8000 miles at 10 kts.	38	4
10	{ S 10-S 13 (BD) S 4, S 6-S 9 (BD) S 3 (BD) }	16, '17 '16, '17 1916	'19-'23 '17-'21 '17-'19	876 1092.4 1200	2000 1200 1400	15.0 10.5	...	38	4
5	{ S 14-S 17 (BD) S 2 (L) }	16, '17 1916	'17-'21 '17-'20	854 1092 800 977	2000 1200 1800 1200	14 12.25 15.0 11.0	For 5000 miles at 11 kts.	38	4
25	{ S 18-S 41 (H) S 1 (H) }	16, '17 1916	'18-'24 '17-'20	854 1052	1200 1500	14.5 11	...	38	4
7	R 21-R 27 (L)	1916	'17-'19	495 598	1000 800	14.0 11.0	3500-1000 at 10 kts.	29	4
20	R 1-R 20 (H)	1916	'17-'19	569 680	880 934	13.5 10.5	...	29	4
6	O 11-O 16 (L)	1915	'16-'18	485 566	1000 880	14.0 11.0	For 3000 miles at 11 kts.	29	4
9	{ O 1-O 4 (H) O 6-O 10 (H) }	1915	'16-'18	520 623	880 740	14.5 11	For 3500 miles at 11 kts.	29	4
6	H 4-H 9 (H)	1917	1918	357.7 434	480 600	12.75 10.75	For 2800 miles at 11 kts. For 30 miles at 5 kts.	25	4
3	N 1-N 3 (H)	1914	'15-'17	347.9 414.2	480 560	13.0 11.0	...	25	4
4	{ L 2-L 3 L 9-L 11 } (H)	'12-'13	'14-'16	450 548	900* 680	14 10.5	For 4500 miles at 11 kts. For — miles at 5 kts.	28	4
8	Second Line: K 1-K 8 (H)	'10-'11	'12-'14	392 521	480 680	14.1 10.6	For 4500 miles at 11 kts. For — miles at 5 kts.	28	4
2	H 2-H 3 (H)	1909	'11-'14	358 434	480 600	14.1 10.6	For 2300 miles at 11 kts. For — miles at 5 kts.	25	4

(BD) = "Bureau Design," i.e., by Bureau of Construction, Navy Dept. (H) = Boats built by Electric Boat Co. (see Memorandum in next column) or to their designs. (L) = Boats built by Lake Co., or to their designs.

*=Standard displacement.

Fleet Submarines—Cruiser Type (SC).
(3 more Fleet Submarines have been authorised.)

V4.

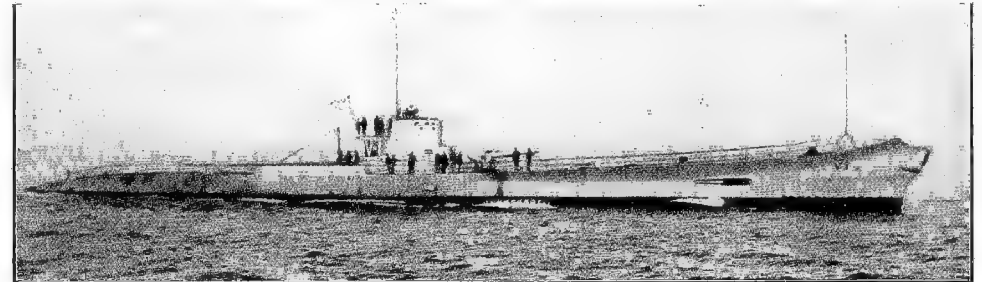
1929 Official Photo.

2 Bureau Design: V5 (1929), V6 (1929). Laid down at Portsmouth and Mare Island Navy Yards, respectively, May 10th and August 2nd, 1927. Machinery for both vessels in hand at New York Navy Yard. Displacement: 3780 (standard) tons. Dimensions: 371 × 33½ × 16 feet. Armament: 1—6 inch, 6—21 inch tubes. Diesels of 5447 S.H.P. = 17 kts. Complement 88. Estimated cost: Hull and machinery, \$5,350,000; armament, \$1,020,000. (Authorised 1916 as Nos. 167—168.) To be completed in 1930.

Fleet Submarines—Minelaying Type (SM).

1 Bureau Design: V4 (Portsmouth Navy Yard, Nov. 10th, 1927). Machinery by Brooklyn Navy Yd. Displacement: 2680 (standard) tons. Dimensions: 341 × 33½ × 15½ feet. Armament: 1—6 inch gun, 4—21 inch tubes, 60 mines. Diesels of 3175 S.H.P. = 17 kts. surface speed. Complement, 86. Is an improved edition of V1 type in other respects. Estimated cost: Hull and machinery, \$5,300,000; armament, etc., \$850,000. Authorised 1916, as No. 166., and completed April, 1928.

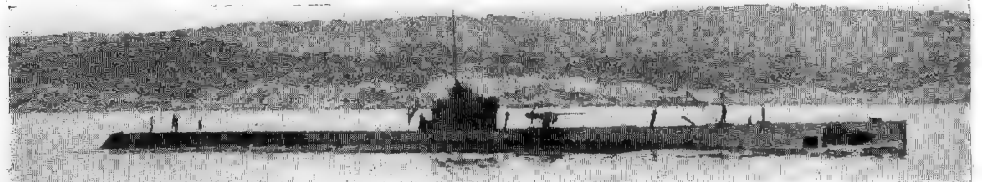
Fleet Submarines—First Line (SF).



V I.

1925 Official Photo.

3 Bureau Design: V1 (July 17th, 1924), V2 (Dec. 27th, 1924), V3 (June 9th, 1925). Authorised 1916-18, as Nos. 163—165, ordered March, 1920, and laid down at Portsmouth Navy Yard, Oct.-Nov., 1921. Dimensions: 300 (w.l.), 341½ (o.a.) × 27½ × 15½ feet. Guns: 1—5 inch (51 cal., H.A. mount), 2 Lewis. Tubes (21 inch): 6 (4 bow, 2 stern). 16 torpedoes carried. Engines: 2 sets of 2250 B.H.P. Busch-Sulzer art for main drive and 2—1000 B.H.P. auxiliary Diesel forward driving generators supplying current to electric motors; these latter and smaller engines can be used for surface cruising with electric drive. Officers' and Men's quarters specially large and comfortable. New structural design used to make these craft (as far as possible) proof against depth charge attack. Specially big fuel capacity and endurance in these boats, so that they can accompany the Fleet to sea on nearly all occasions. Cruising radius believed to be 12,000 miles. This type is said to be capable of crossing the Atlantic and returning without refuelling or otherwise receiving attention. Authorised 1916-18 as Nos. 163—165. Understood that a small seaplane of special design is included in equipment of this class, being carried abaft C.T. Secretary of Navy has stated that these vessels (the first submarines to have electric drive) have proved satisfactory in service. Dates of completion: V 1, Oct., 1924; V 2, Sept., 1925; V 3, May, 1926.



T1.

1921 Photo, by courtesy of Bureau C. & R.

3 Electric Boat Co. design: T1 (ex-AA 1, ex-Schley, 1918), T2 (ex-AA 2, 1919), T3 (ex-AA 3, 1919), all by Bethlehem S.B. Corp., Quincy. Dimensions: about 264 (w.l.), 268½ (o.a.) × 22½ × 14½ feet. Machinery: 4 sets of Nelsco Diesel engines on surface, arranged in tandem pairs to 2 screws. S.H.P. (T1, T2, 4000, T3) 4700. On trials all exceeded surface designed speed of 20 kts. by 3 to 4 kts. Armament: 1—4 inch gun and 6—21 inch tubes (4 bow and 2 deck aft). 16 torpedoes carried. For other details v. Table. Authorised: T1 (1914, as No. 52), T2, T3 (1915, as Nos. 60, 61). Designed 1914. Completed 1920-22. Surface endurance: 7000/9000 miles. Although designed as Fleet Submarines, these vessels are officially admitted to be incapable of manœuvring with the fleet under all conditions, the tandem arrangement of engines having proved unsatisfactory.

Submarines—First Line (SS).

Note on S Class.—An official report in 1925 stated that "experience in manœuvres indicates that these vessels cannot be considered as a satisfactory type of fleet submarines."



S 50.

Photo, 1923.

4 *Bureau design: S48—S51* (1921). All by Lake T. B. Co. Dimensions: $240 \times 21\frac{1}{2} \times 13\frac{1}{2}$ feet. Guns: 1—4 inch, 50 cal. Tubes: 5—21 inch (4 bow, 1 stern). 14 torpedoes carried. Engines: 2 sets of 900 B.H.P. Busch-Sulzer except S 48, 2 sets M.A.N. (N.Y.) 4 cycle 6 cyl. = total B.H.P. 2000. Motors: 2 sets each 750 h.p. Ridgeway. Crash dive in 60 secs. Max. dive limit: 200 feet. Divided into 6 watertight compartments. Double hull amidships, single hull at ends. 3 periscopes. Oil: 23,411 gallons normal, 44,305 max. For any other details, v. Table. Authorized 1916-18, as Nos. 159—162.

Note.—S 51, of this type, was sunk by collision, Sept. 25th, 1925. She was salvaged and brought into port July, 1926, and is still retained on effective list. S 48 is stated to have been re-engined in 1929 with two new motors of 1000 H.P. each, oil storage being increased at same time.



S 45.

1926 Official Photo.

6 *Electric Boat Co. design: S42—S47* (1923-24). All contracted for by Electric Boat Co. and built by Bethlehem S. B. Co., Quincy. Authorized 1916-18, as Nos. 153—158. Dimensions: $225\frac{1}{2} \times 20\frac{3}{4} \times 16$ feet = 906/1126 tons. Guns: 1—4 inch, 50 cal. Tubes: 4—21 inch. 12 Torpedoes carried. Engines: Two sets 600 B.H.P., 8 cylinder, 4 cycle Nelseco. Motors: 2 sets each 750 H.P. Elect. Dy. Co. Oil: 11,463—46,363 gallons.



S 30.

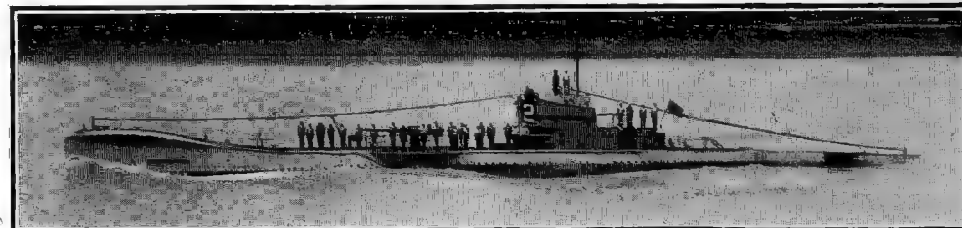
1921 Copyright Photo, O. W. Waterman.

25 *Electric Boat Co. design: S1* (1918), *S18—41* (1918-22), viz., S 1 by Fore River S. B. Co., S 18—S 29 by Bethlehem S. B. Co., Quincy. S 30—S 41 by Bethlehem S. B. Co., San Francisco. Dimensions: $219\frac{1}{2} \times 20\frac{3}{4} \times 16$ feet. Machinery: 2 sets of 600 B.H.P. Nelseco Diesel engines. Motors: 2 sets 750 H.P. Ridgeway or Electric Dynamic Co. (S 1). Oil: 11,511/41,921 gallons. Have large radius of action on surface. Armament: 1—4 inch gun and 4—21 inch bow tubes (12 torpedoes carried). Authorized: S 1 (1916, as No. 103), S 18—21 (1916-17 as Nos. 123—126), S 22—41 (1916-17, as Nos. 127—146). S 1 experimentally fitted, 1923, to carry a small seaplane in a cylindrical tank abaft C.T.

General Note to all "S" boats.—Special attention given to constructional strength against depth charge attack. S 37 was immersed to a depth of 208 feet for 65 minutes without inconvenience. S 1—4, S 6—8, S 14—35, all have Cutler-Hammer system of electric control. S 9—13, S 36—51, all fitted with Westinghouse or G. E. Co. pneumatic controllers, considered to be a decided improvement.

**Note.*—S 30 built at expense of Philippines Government. S 19 reached 33 fathoms during diving trials, Dec., 1925.

Submarines—First Line—continued.



S 2.

1928 Photo, W. Thompson, Wsq.

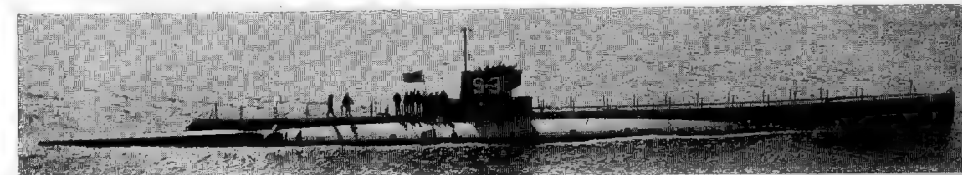
1 *Lake type: S2* (1919). Dimensions: $207 \times 19\frac{1}{2} \times 16\frac{1}{2}$ feet = 800/977 tons. Guns: 1—4 inch, 50 cal. Tubes: 4—21 inch (12 torpedoes carried). Engines: 2 sets Busch-Sulzer, total B.H.P. 1,800. Motors: 2—600 H.P. Diehl Mfg. Co. Speed, 15/11 kts. Complement, 38. Oil, 17,491/26,458 gallons.

Special Note.—In 1921, S 2 was fitted with an experimental type of flexible clutch, which permits change-over of drive when surfacing or diving to be made without reduction of speed. This type of clutch proved so successful that it is understood to have been fitted to all submarines under construction since.



S 4 (Special experimental boat—see Notes).

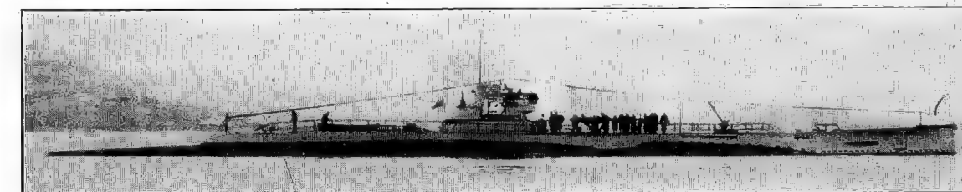
Courtesy Bureau C. & R., 1921.



S 3 (gun not mounted).

1920 Photo.

10 "*Bureau design*" boats: S3, (1918), S4, S6—S13 (1919-21); all by Portsmouth N.Y. Yd. Dimensions: $231 \times 21\frac{1}{2} \times 13\frac{1}{2}$ feet. Guns: 1—4 inch, 50 cal. Torpedo tubes: 4—bow, 21 inch (12 torpedoes carried). S 10—S 13, 5 tubes (14 torpedoes carried). Engines: S 3—9, 2 sets of 4-cycle Nelseco Diesels, each 700 B.H.P. (8 cyl); S 10—13, 2 sets of 4-cycle "Bureau Design" M.A.N. (6 cyl.) type, each 1000 B.H.P. Motors: 2 sets 600 H.P. Westinghouse. Oil: 19,271/36,950 gallons. Authorized: S 3 (1916, as No. 107), S 4—13 (1916-17, as Nos. 109—118). S 5 lost, 1920. Completed 1919-23. Other details as Table. S 4, sunk by collision with Coast Guard Destroyer, Paulding, on December 17, 1927; salvaged and brought into port March 1928. Is now used as a special vessel for experimental purposes, and has no propulsive machinery at present.



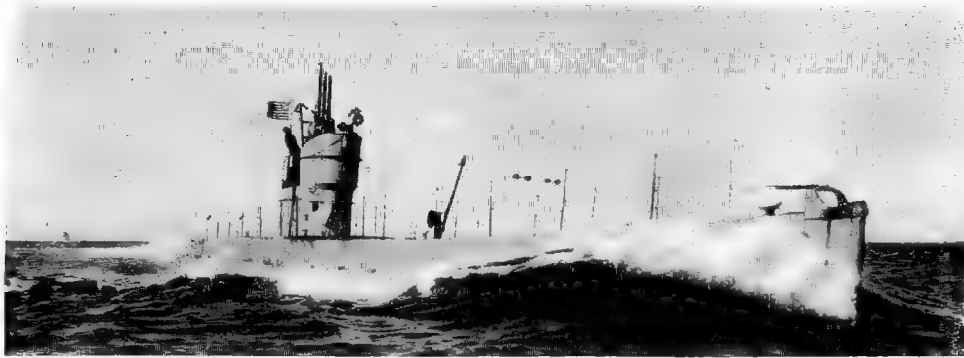
S 14.

1920 Official Photo.

4 *Bureau design: S14—S17* (1919—20). All by Lake T.B. Co. Dimensions: $231 \times 21\frac{1}{2} \times 13$ feet = 876/1092 tons. Guns: 1—4 inch, 50 cal. Tubes: 4—21 inch (12 torpedoes carried). Engines: 2 sets M.A.N. (N.Y.) 4 cycle 6 cyl. = B.H.P. 2,000. Motors: 2 sets each 600 H.P. Westinghouse. Speed, 14/12.25 kts. Complement, 38. Oil, 19,271/36,950 gallons.

Submarines—First Line (SS).

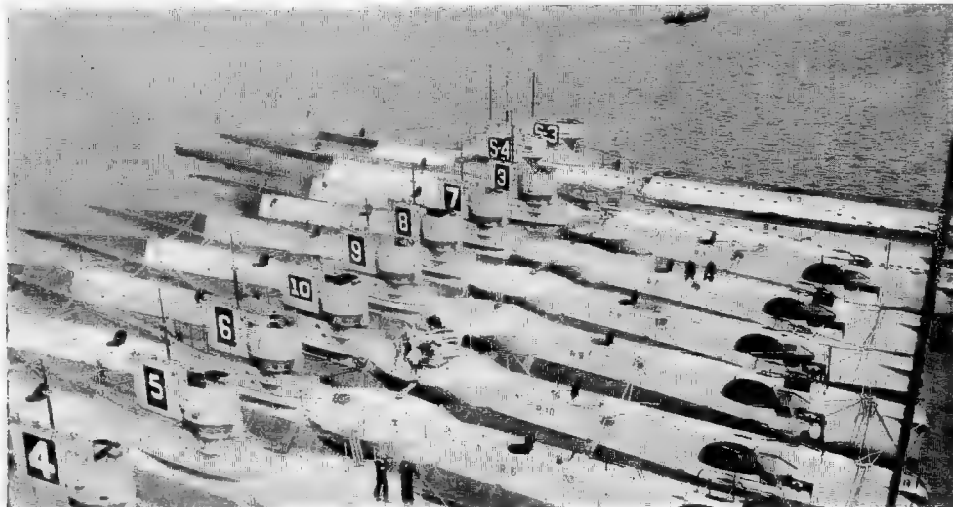
(Following vessels are officially considered to be fit only for coast defence.)



R 23.

1920 Photo.

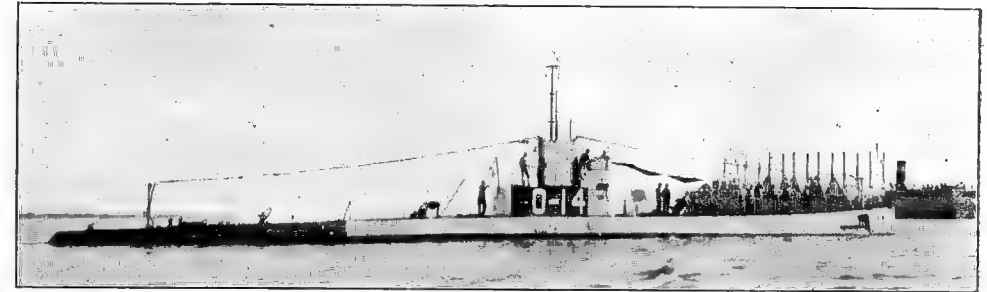
7 Lake type: **R 21—R 27** (1918-19), all built by Lake T. B. Co. Dimensions: 175 × 16½ × 14 feet. Guns: 1—3 inch, 50 cal. Torpedo tubes: 4 (8 torpedoes carried). Engines: 2 sets of 500 H.P. (410 r.p.m.) 6-cyl. 4-cycle Busch-Sulzer. Fuel: 9715/17,922 gallons. Motors: 2—400 H.P. Diehl Mfg. Co., with Cutler-Hammer Co. magnetic controllers. Batteries: Electric Storage Co. Type 31-W.L. Authorized 1916, as Nos. 98—104. Completed 1919. Other details as Table.



R 3—R 10.

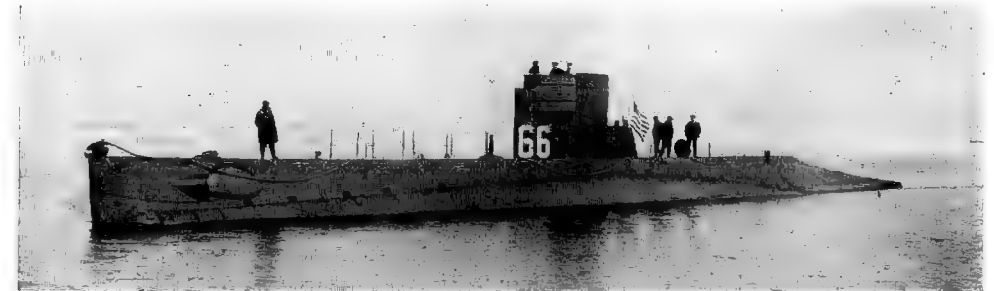
1920 Photo.

20 Electric Boat Co. design: **R 1—R 20** (1917-19), viz., **R 1—R 14** by Fore River S. B. Co., **R 15—R 20** by Union I. W., San Francisco. Dimensions: 186 ft. 1 in. × 18 × 14½ feet. 1—3 inch, 50 cal. gun. 4 torpedo tubes (8 torpedoes carried). Engines: 2 sets of 440 B.H.P. (400 r.p.m.) 6-cyl. 4-cycle Nelsco Diesel. Fuel: 7691/18,880 gallons. Motors: 2—467 H.P. Electric Dynamic Co., with Cutler-Hammer Co. magnetic controllers. Batteries: Electric Storage Co. Type 31-W.L. Other details as Table. Authorized 1916, as Nos. 73—97. Completed 1918-19.

Submarines—First Line—continued.

1924 Official Photo.

6 Lake type: **O 11—O 16** (1917-18), viz., **O 11—O 15** by Lake T. B. Co., **O 14—O 16** by California S. B. Co. (completed by Mare Island Navy Yard). Dimensions: 175 × 16½ × 13½ feet. 1—3 inch, 23 cal. A.A. gun. 4 torpedo tubes (8 torpedoes). Engines: 2 sets of 500 B.H.P. (410 r.p.m.) 6-cyl. 4-cycle Sulzer Diesel engines. Fuel: 10,094/18,588 gallons. Motors: 2—440 H.P. Diehl Mfg. Co., with Cutler-Hammer Co. magnetic controllers. Electric Storage Co. batteries, Type 29-W.L. Radius of action as **O 1—O 10**, below. Authorized 1915, as Nos. 72—77. Completed 1918. Other details as Table.



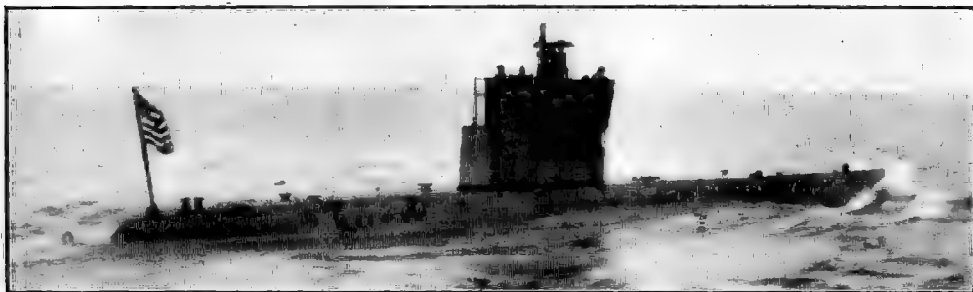
O 5.

1920 Photo.

9 Electric Boat Co. design: **O 1—O 4** and **O 6—O 10** (1917-18), viz., **O 1** by Portsmouth N.Y.; **O 2** by Puget Sound Navy Yard; **O 3**, **O 4** and **O 6—O 10** by Fore River Co. Dimensions: 172½ × 18 × 14 ft. 5 in. 1—3 inch, 23 cal. A.A. gun. 4 torpedo tubes (8 torpedoes). Engines: 2 sets of 440 B.H.P. (400 r.p.m.) 6-cyl. 4-cycle Nelsco Diesel engines. Fuel: 10,089/21,897 gallons. Motors: 2—370 H.P. in **O 1**, **O 2**, by New York Navy Yard; in others, by Electric Dynamic Co., all with Cutler-Hammer Co. magnetic controller. Gould storage batteries, Type 29-W.L. in **O 1** and **O 2**. Electric Storage Co., Type 49-W.L. in others. Electric batteries weigh 65 tons. Radius of action: 3500-3000 miles, at 11 kts. on surface. Authorized 1915, as Nos. 62—71. Completed 1918. Other details as Tables.

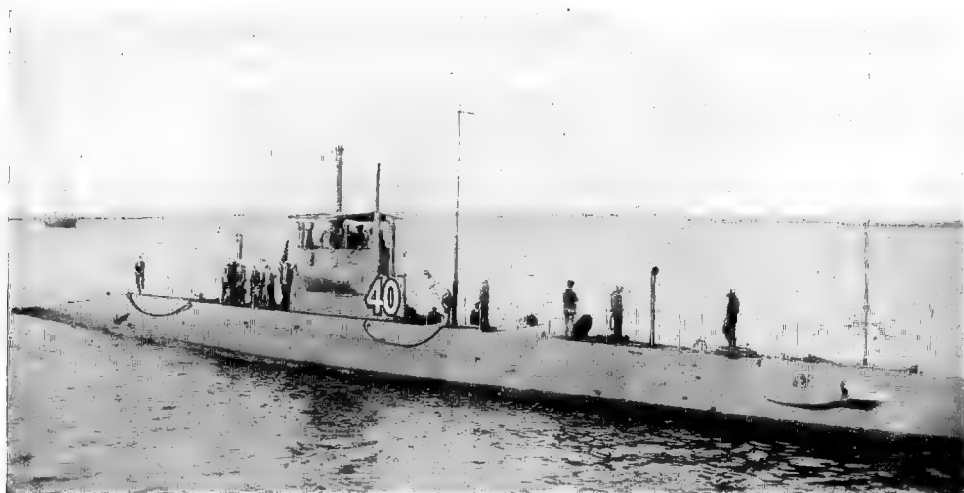
Note.—**O 5** wrecked, Oct. 28, 1923, and not considered worth repair after salvage.

Submarines—First Line—continued.



1925 Photo, by courtesy of the Navy Dept.

3 *Electric Boat Co. design: N1-N3* (1916-17) designs by Electric Boat Co., built by Seattle Constrn. & D D. Co. Dimensions: 147½ × 15½ × 12½ feet. 4 bow 18 inch torpedo tubes (to carry 8 torpedoes). Engines: 2 sets 240 B.H.P. (375 r.p.m.) 8-cyl., 4-cycle Nelseco Diesel engines. Fuel: 6068/6068 gallons. Motors: 2—280 H.P. Electric Dynamic Co., with E.B.C. Knife Control Switch. Gould storage batteries, Type 23-WL. Radius of action: 1500 miles at cruising speed on surface, and — miles at 5 kts. submerged. Authorized 1914, as Nos. 53—55. Other details as Table.



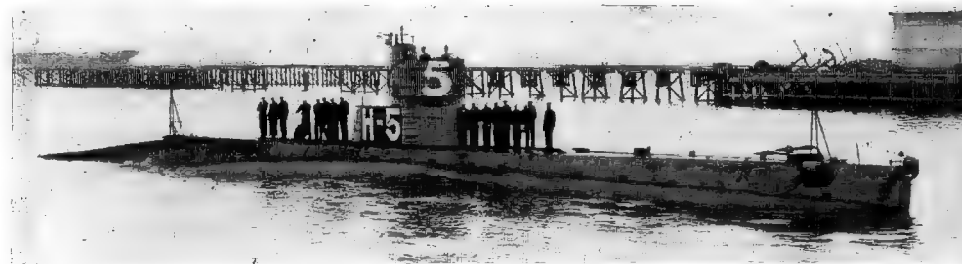
1919 Photo.

L 3.
4 *Electric Boat Co. design: L 2, 3, 9, 11* (1915-16), by Fore River Co. Dimensions: 168½ × 17½ × 13½ feet. 1—3 inch, 23 cal. A.A. gun. 4—18 inch torpedo tubes (8 torpedoes). Engines*: 2 sets of 450 B.H.P. (450 r.p.m.) 6-cyl., 2-cycle Nelseco Diesel engines. Fuel: 9361/19,500 gallons. Motors: 2—340 H.P. Electric Dynamic Co., with Cutler-Hammer magnetic controllers. Batteries: Electric Storage Co., Type 27-WL in L 1—4, 49-WL in L 9—11. Radius of action: about 4500 miles on surface at cruising speed, and — miles at 5 kts. submerged. Cost \$650,000 each. L 1—4 authorized 1912, as Nos. 40—43 and L 9—11, 1913, as Nos. 49—51. Other details as Table.

Note.—When in European waters, during the War, were marked as "AL" Class, to distinguish them from the British "L Class" Submarines. L 5—L 8, Lake designed boats, have been removed from Effective List.

*Naval Appropriation Bill, 1921-22, included item for renewal of engines, which is understood to have been carried out.

Submarines—First Line—continued.



H 5.

1921 Copyright Photo, O. W. Waterman.

6 *Electric Boat Co. design: H 4—H 9* (1918), all assembled by Puget Sound Navy Yard. Dimensions: 150½ × 15½ × 12½ feet. 4 bow 18 inch tubes (8 torpedoes carried). Engines: 2 sets of 240 B.H.P. (350 r.p.m.) 8-cyl., 4-cycle Nelseco Diesel engines. Fuel: 5275/11530 gallons. Motors: 2—300 H.P. Electric Dynamic Co., with Electric Boat Co. knife-switches. Other details as Table.

Notes.—Ordered for Russian Government, but bought in knock-down condition by U.S. Government and assembled in 8½ months.

Submarines—Second Line (OSS.)



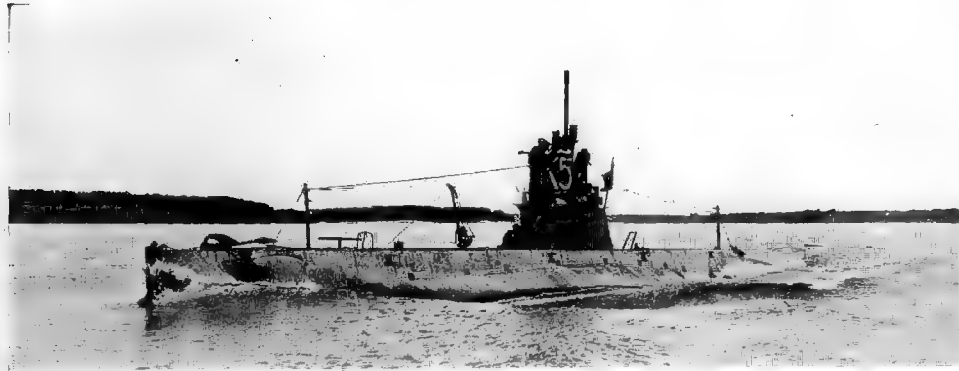
H 2.

1921 Photo.

2 *Electric Boat Co. design: H 2* (ex-Nautilus), and *H 3* (ex-Garfish). (1913). *H 2* by Union I. W., *H 3* by Moran Co. Dimensions: 150 ft. 3 in. × 15 ft. 9½ in. × 12½ feet. 4—18 inch torpedo tubes. 8 torpedoes carried. Engines: 2 sets of 240 B.H.P. (350 r.p.m.) 8-cyl., 4-cycle Nelseco Diesel. Fuel: 5220/9663 gallons. Motors: 2—300 H.P. Electric Dynamic Co., with Electric Boat Co. knife-switch control. Electric Battery Co. storage batteries, 27-WL type. Radius of action: about 2300 miles at 11 kts. on surface, 30 miles at 5 kts. submerged. *H 1* (ex-Seawolf) wrecked, March, 1920. All three authorized 1909, as Nos. 28—30. Other details as Table.

Notes.—One of the most successful submarine types ever evolved. The British, Chilean and Italian *H* classes and Russian *AG* class, built or assembled during the War of 1914-18, were all slightly improved editions of this design.

Submarines—Second Line—continued.



K 5

1919 Photo.

8 Electric Boat Co. design: **K 1** (ex-Haddock), **K 2** (ex-Cachalot), **K 3** (ex-Orca), **K 4** (ex-Walrus), and **K 5—K 8**. (1913-14.) **K 1, 2, 5, 6**, by Fore River, **K 3, 7, 8**, by Union I.W., **K 4** by Moran Co. Dimensions: 153½ × 164 × 13 feet. 4—18 inch bow torpedo tubes. 8 torpedoes carried. Engines: 2 sets 8 cyl., 4-cycle 240 B.H.P. (350 r.p.m.) Nelsec Diesel engines. Fuel: 9326/17,086 gallons. Motors: 2—340 H.P. Electric Dynamic Co., with Cutler-Hammer Co. magnetic controller. Electric Storage Co. batteries, 27-W.L. type (in **K 2, 4, 9-W.L.**). Radii of action: 4500 miles at 10 kts. on surface, — miles at 5 kts. submerged. Other details as Table.

Notes.—**K 1—K 4**, authorized 1910, **K 5—K 8**, in 1911, as Nos. 32—39.

Patrol Vessels—Eagles (PE).



EAGLE 17.

1919 Photo by courtesy of the Ford Motor Co., Detroit.

53 "EAGLE BOATS":—

Eagle 1—15; Eagle 18, 19; Eagle 22—24; Eagle 26—29; Eagle 32—60.

Missing Numbers:—Transferred to Coast Guard: 16, 20, 21, 30. Wrecked, 17, 25. Sold, 31.

Nos. 1—12 launched 1918. Nos. 13—60, 1919.

Displacement, normal 500 tons, full load 615 tons. Complement, 61.

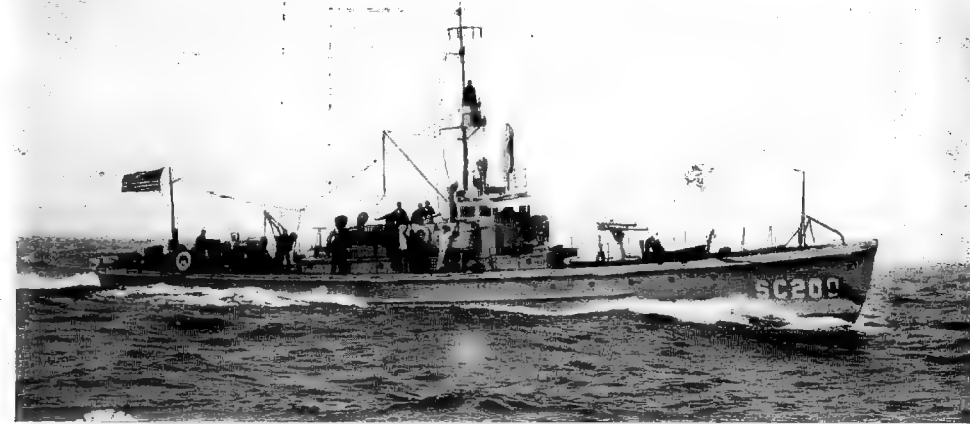
Dimensions: Length, 200 feet (p.p. and o.a.). Beam, 25½ feet. Mean draught, 7½ feet; full load, 8½ feet.

Armament: 2—4 inch (50 cal.), 1—3 inch AA., 2 M.G. Carry 12 depth charges.

Machinery: Poole geared turbine. 2 Bureau Express boilers. 1 screw. Designed H.P. 2500 = 18 kts. Fuel: 105 tons coal + 45 tons oil. Endurance: 3500 miles at 10 kts.

Notes.—Assembled by Ford Eagle Boat Plant, River Rouge; machinery and fittings by Ford Plant, Highland Park, Detroit. Majority now assigned to Naval Districts and Ports; to Naval Academy; or for duty with U.S.N.R.F.

Patrol Vessels—Submarine Chasers (PC).



SC. 200

1919 Photo.

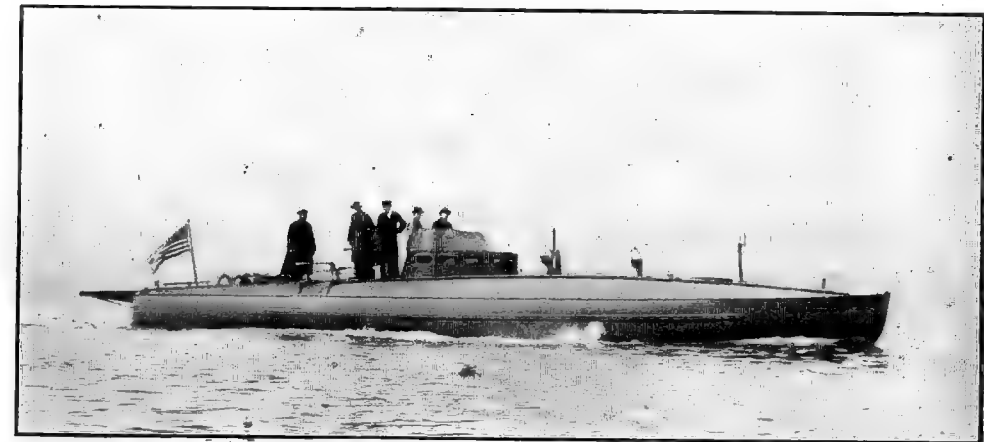
27—110 ft. boats:—Numbered between **SC. 57** and **SC. 440**. Built 1917-19 by various Navy Yards and private contractors.

Displacement, 77 tons normal, 85 tons full load. Wooden hulls. Length, 105 feet (p.p.), 110 feet (o.a.). Beam, 14 feet 9 ins. Mean hull draught, 5 feet 6 ins., full load aft, 5 feet 8 ins. Machinery: three sets of 220 B.H.P. Standard petrol motors=17 kts. 2400 gallons petrol = 900 miles at 10 kts. Complement, 26. Have small radius W/T.

Armaments: Majority have 1—3 inch (23 cal.), and 2 Colt M.G. Carry depth charges.

Notes.—Quick rollers with period of about 5 secs.

C. M. B.



55 Ft. C.M.B.

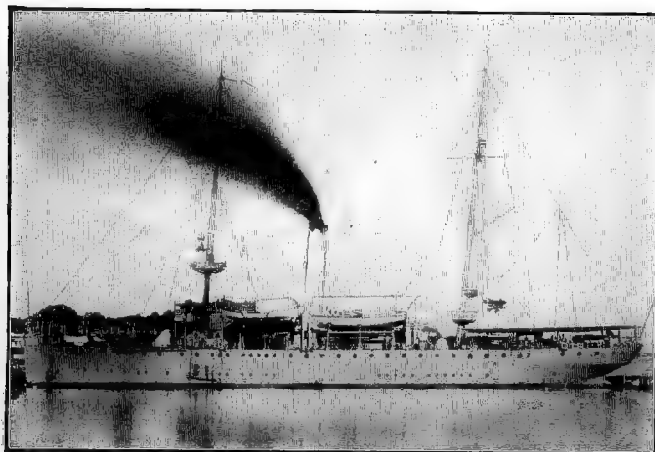
1922 Photo, by courtesy of Messrs. Thornycroft.

1—55 ft. type (1922). 2 Thornycroft Y12 motors of 350 B.H.P.=38 kts. Armament: 2 Lewis guns, 2—18 inch torpedoes, 2 D.C. Complement, 5.

No name or number assigned. Built for U.S.N. by Thornycrofts for experimental purposes. Is similar to British models, q.v.

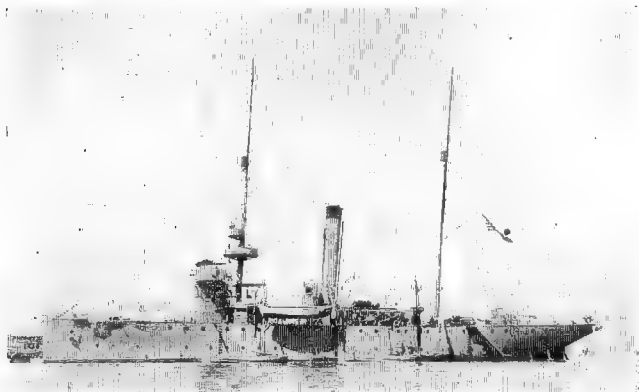
U.S.A.—Patrol Vessels.

Patrol Vessels—Gunboats (PG).



TULSA. 1925 Photo, by courtesy of the Navy Dept.

TULSA (Charleston, N.Y., 25th August, 1922). **ASHEVILLE** (Charleston, N.Y., July, 1918). Normal displacement, 1575 tons (full load, 1760 tons). Complement, 185. Length (*p.p.*) 225 feet, (*o.a.*) 241½ feet. Beam, 41½ feet. Mean draught, 11½ feet. Guns: 3—4 inch, 50 cal., 2—3 pdr., 3—1 pdr. Machinery: Parsons turbine with reduction gear. 1 screw. Boilers: 3 Bureau (modified Thornycroft). Designed H.P. 800 = 12 kts. Fuel, 180 tons coal + 440 tons oil.



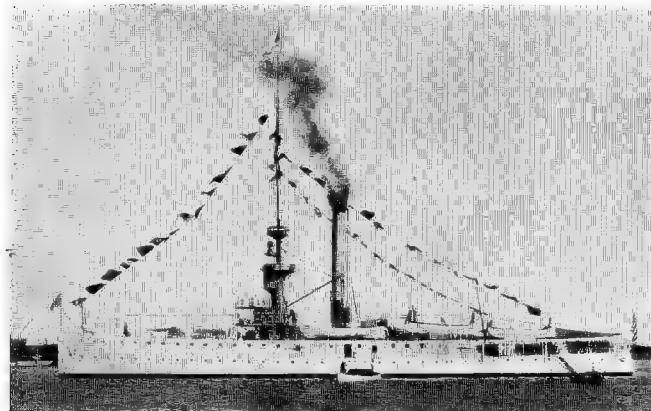
1919 Photo.

SACRAMENTO (Feb., 1914). Normal displacement, 1425 tons. Complement, 153. Length (*waterline*), 210 feet. Beam, 40½ feet. Mean draught, 11½ feet. Guns: 3—4 inch, 50 cal.; 2—3 pdr.; 2—1 pdr. Machinery: 1 set triple expansion. Boilers: 2 Babcock. H.P. (on trials), 1022 = 12.78 kts. Coal: maximum, 428 tons. Built by Cramps. Completed, 1914.

(Continued in next column.)

PATROL VESSELS.

Patrol Vessels—Gunboats (PG)—continued.



(Height of funnel reduced by about one-third, 1923.) 1920, Official Photo.

(Asiatic Fleet.)

HELENA (1896). Displacement: 1392 tons. Complement, 193 to 196. Length (*waterline*), 250½ feet. Beam, 39½ feet. Mean draught, 9 feet. Guns: 8—4 inch, 40 cal.; 4—3 pdr. Machinery: 2 sets vertical triple expansion. 2 screws. H.P. (trials) 1988 = 15.5 kts. Coal: maximum, 307 tons. Nominal radius 2200 miles at 10 kts.

Note.—Wilmington, sister to Helena, is still retained in service for training purposes under heading "Unclassified."

Patrol Vessels—River Gunboats (PR).



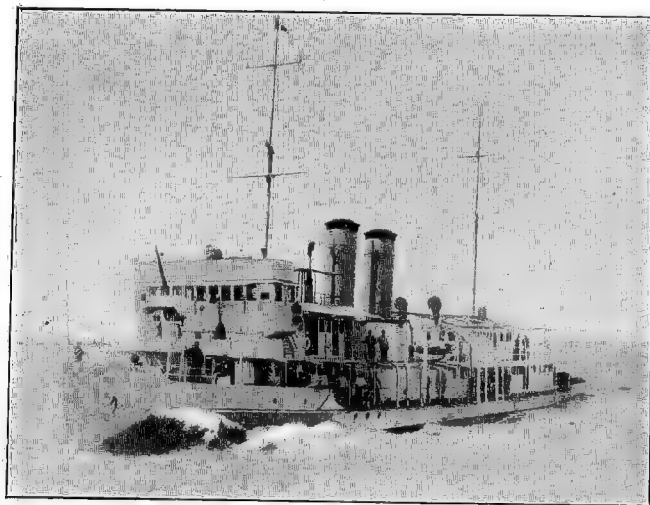
GUAM.

1928 Official Photo.

GUAM, TUTUILA. Displacement: 350 tons standard. Mean draught (fresh water), 5½ feet. Freeboard at side (main deck): Forward, 6 ft. 3 in.; amidships, 3 ft. 5 in.; aft, 4 ft. 2 in. Triple expansion engines, $\frac{12 \times 18 \times 29}{16}$, revs. 320. H.P. 1950 = 14.5 kts. Guns: 2—3 inch, 23 cal., behind shields, 10—30 cal.

(Continued in next column.)

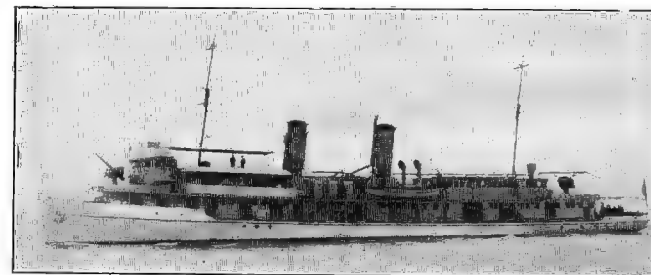
Patrol Vessels—River Gunboats (PR)—continued.



PANAY.

1929 Official Photo.

OAHU, PANAY. Displacement: 385 tons standard. Mean draught (fresh water), 5½ feet. Freeboard at side (main deck): Forward, 7 ft. 9½ in.; amidships, 3 ft. 9½ in.; aft, 4 ft. 6 in. Triple expansion engines, $\frac{13 \frac{1}{2} \times 22 \times 34}{16}$, revs. 320. H.P. 2250 = 15 kts. (Trials, 17.73 kts). Guns: 2—3 inch, 50 cal. AA., 10—30 cal.



LUZON.

1929 Official Photo.

LUZON, MINDANAO. Displacement: 500 tons standard. Mean draught (fresh water), 6 feet. Freeboard at side (main deck): Forward, 10 ft. 7 in.; amidships, 5 ft. 7 in.; aft, 5 ft. 10 in. Triple expansion engines, $\frac{15 \times 23 \times 36 \frac{1}{2}}{18}$, revs. 320. H.P. 3150 = 16 kts. Guns: 2—3 inch, 50 cal. AA., 10—30 cal. The following characteristics are common to all six:—2 Thornycroft oil-burning boilers, 250 lbs. working pressure. 2 screws. Lengths of each pair are 150, 180 and 198 feet respectively.

Above 6 gunboats authorized 1924 as PG 43—48, and laid down 1926 by Kiangnan Dock and Engineering Works Shanghai. Completed, 1927-28.

(Continued on next page.)

Patrol Vessels—River Gunboats (PR)—continued.



MONOCACY.

1927 Photo.

(Asiatic Fleet.)

MONOCACY (1914), **PALOS** (1914). 190 tons. Complement, 46. Guns: 2—3 inch 23 cal., 7—30 cal. Machinery: 2 sets vertical compound. Boilers: 2 Babcock. Designed H.P. 800=13½ kts. Coal: 34 tons. Built at Mare Island Navy Yard and re-erected by Shanghai Dock and Engineering Co.

Patrol Vessels—Yachts (PY).

Note.—Down to and including *Niagara*, all purchased during World War. Remaining 3 purchased during war with Spain, 1898.



ISABEL.

1927 Photo.

ISABEL (Bath I.W., 1917, taken over 1917). 938 tons*. Dimensions: 230 (w.l.) × 26½ × 10½ feet. Guns: 2—3 inch, 50 cal., 2—3 inch, 23 cal. A.A. S.H.P. 8400=26 kts. Parsons turbine and 2 Normand boilers. Fuel: 216½ tons oil. Complement, 112.

Note.—Was fitted and classed as a Destroyer during the World War.

* Full load.

PATROL VESSELS.

Patrol Vessels—Yachts (PY)—continued.

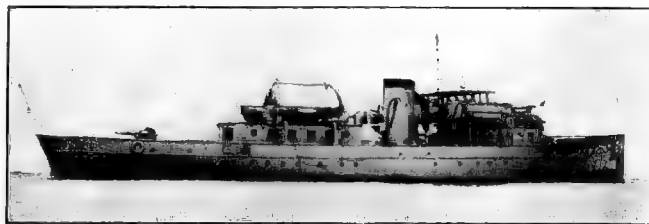


NOKOMIS.

1925 Photo, by courtesy of the Navy Dept.

(On Surveying Service.)

NOKOMIS (ex-*Nokomis II*, 1917, taken over 1917). 1265 tons. Dimensions: 203 × 31½ × 13½ feet. Guns: 2—3 inch, 30 cal., 4—6 pdr. Boilers: 2 Babcock. I.H.P. 2000=16 kts. Coal: 350 tons = 1517 miles at 14.7 kts. Complement, 87.



1921 Official Photo.

ARAMIS (1916, taken over 1917). Motor Yacht of 375 tons. Dimensions: 153½ × 22½ × 7½ feet. Guns: Nil. S.H.P. 700 = 13 kts. Craig 4-cycle 6-cyl. Diesel engines. Fuel: 7500 gallons = 3750 miles at 9 kts. Complement, 53. (Transferred to "District Craft Unclassified," 8th Sept., 1924.)

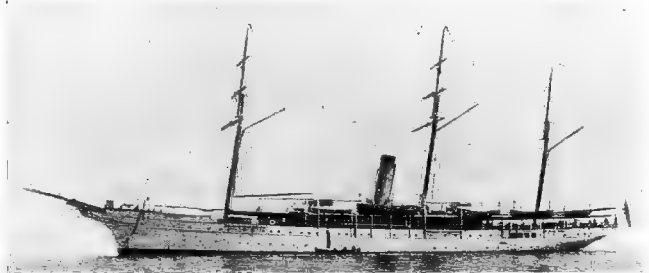


Photo by courtesy of Rear-Admiral Twining, U.S.N.

(On Surveying Service.)

NIAGARA (1898, taken over 1917). 2800 tons. Dimensions: 245 × 36 × 17 feet. Guns: 4—4 inch, 50 cal., 2—3 pdr. Boilers: 3 Babcock. I.H.P. 1800 = 13 kts. Coal: 400 tons = 3500 miles at 12 kts. Complement, 185.

Patrol Vessels—U.S.A.

Patrol Vessels—Yachts (PY)—continued.



(Navy Dept. Tender.)

SYLPH (1898). 152 tons. Armament: 2—3 inch, 30 cal. Boilers: 2 Almy. H.P. 550=15 kts. Coal: 36 tons. Complement, 35.



Photo, Lieut. F. S. Dowell, U.S.N.

(President's Yacht.)

MAYFLOWER (1896). 2690 tons. Dimensions: 275½ × 36 × 17 feet. Guns: 4—6 pdr., 2—30 cal. Boilers: 2 Thornycroft. H.P. 2100 = 14½ kts. Oil: 455 tons. Complement, 175.



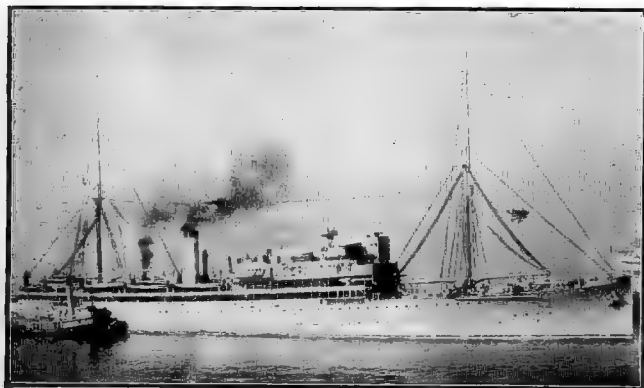
SCORPION (ex *Sovereign*, 1896). 775 tons. Dimensions: 212 × 28 × 11 feet. Armament: 2—6 pdr., 2—30 cal. Boilers: 4 Yarrow. H.P. 2800=17.8 kts. Coal: 136 tons. Complement, 92.

U.S.A.—Destroyer Tenders.

DESTROYER TENDERS.

General Note to this and following pages.—Armaments of U.S. Tenders and Auxiliaries as given below are those authorised, but in a great many cases these are not actually carried under peace conditions.

Destroyer Tenders (AD).

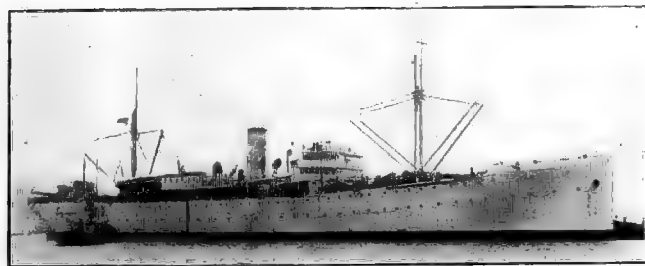


DOBBIN.

1925 Official Photo, U.S. Navy Dept.

WHITNEY (Boston N.Y.d., Oct. 12th, 1923), **DOBBIN** (Philadelphia N.Y.d., May 5th, 1921). *12,450 tons. Dimensions: 460 (p.p.), 483½ (o.a.) × 61 × 24½ feet (mean draught). Guns: 8—5 inch, 4—3 inch AA., 2—6 pdr. Torpedo tubes, for testing purposes: 2—21 inch. Parsons geared turbines. Boilers: 2 Bureau Modified Thornycroft. 1 screw. Designed S.H.P. 7000 = 16 kts. Oil: 1107 tons. Complement, 452. Equipped to serve as Depot, Repair and Hospital Ship for 18 Destroyers. To have special anti-torpedo protection. Generally sister ships to *Holland*, Tender to Submarines. Both fitted as flagships.

* Full load.



ALTAIR.

1927 Official Photo.

ALTAIR (1919), **DENEbola** (1919), **RIGEL** (1918). 13,925 tons. Dimensions: 423½ × 54 × 20 feet. Guns: 4—5 inch, 51 cal., 4—3 inch AA., 2—6 pdr. Curtis geared turbines. Boilers: 3 single-ended. S.H.P. 2500 = 10.5 kts. Oil: 1097 tons. Complement, 481 (*Rigel*, 531). All three built by Skinner & Eddy Corporation, Seattle.

Destroyer Tenders (AD)—continued.



1919 Photo, C. E. Waterman.

(Battle Fleet.)

MELVILLE (1915) 7150 tons. Complement, 473. Dimensions: 400 (p.p.) × 54½ × 20 feet (mean draught). Guns: 8—5 inch (51 cal.), 1—3 inch AA., 2—3 pdr. Torpedo tubes: 1—18 inch. Machinery: Parsons geared turbines. 2 Thornycroft boilers. H.P. (estimated) 4006 = 15.09 kts. Fuel: 930 tons oil.



1920 Photo.

(Asiatic Fleet.)

BLACK HAWK (Cramp, 1913, ex-Grace Steamship Co. S.S. *Santa Catalina*, taken over 1917). 8,900 tons. Dimensions: 404½ (p.p.) × 53½ × 19½ feet. Guns: 4—5 inch, 2—3 pdr., 2—1 pdr. Boilers: 3 single-ended. I.H.P. 3400 = 13 kts. Oil: 2108 tons. Complement, 471.

Destroyer Tenders (AD)—continued.



1920 Photo, Seward, Weymouth.

(Scouting Fleet.)

BRIDGEPORT (Vegesack, Germany, 1901, ex-North German Lloyd S.S. *Breslau*, seized 1917). 11,750 tons. Dimensions: 429½ (p.p.) × 54½ × 24½ feet. Guns: 8—5 inch, 4—3 inch 50 cal. AA. Boilers: 2 double-ended and 2 single-ended. I.H.P. 3600 = 12.5 kts. Coal: 1060 tons. Complement, 552.

Auxiliaries—Submarine Tenders (AS).

Note.—Obsolete Cruiser *Alton*, ex *Chicago*, Submarine Barracks at Pearl Harbour. Various Minesweepers of "Bird" class serve as Submarine Tenders at New London, Hampton Roads; Coco Solo, and Pearl Harbour.



1926 Official Photo.

HOLLAND (Puget Sound N. Yd., 1926. Begun Apl. 11th, 1921, completed 1926). 11,570 tons. Dimensions: 513 (o.a.) \times 61 (extreme) \times 22½ feet (mean draught). Guns: 8—5 inch, 4—3 inch AA., 2—6 pdr. Torpedo tubes: 1—21 inch, submerged. Parsons geared turbines. 1 screw. Boilers: 2 Bureau Modified Thornycroft. Designed S.H.P. 7000 = 16 kts. Oil: 1050 tons. Complement, 398. Generally sister ship to *Whitney* and *Dobbin*, Destroyer Tenders.

(Photo wanted.)

ARGONNE (Hog Island, 1920). 11,100 tons. Dimensions: 448 \times 58 \times 24½ feet max. draught. Guns: 4—5 inch 51 cal., 4—3 inch, 50 cal. A.A., 2—6 pdr. Curtis geared turbines. 1 screw. Boilers: 6 Babcock. S.H.P. 6000 = 15 kts. Oil fuel: 1473 tons. Complement, 344.



1926 Official Photo.

CANOPUS (New York S.B. Co., 1919). 8000 tons. Dimensions: 373½ \times 51½ \times 21½ feet. Guns: 2—5 inch, 51 cal., 4—3 inch AA., 2—3 pdr. Machinery: Quadruple expansion. 1 screw. Boilers: 4 single-ended. H.P. 3858 = 13 kts. Oil: 1277 tons. Complement, 317.

Auxiliaries—Submarine Tenders (AS)—continued.



BUSHNELL.

1919 U. S. Navy Photo.

(Atlantic Fleet.)

BUSHNELL (Seattle Constrn. and D.D. Co., 1915). 3580 tons. Complement: 217. Dimensions: 350½ \times 45½ \times 15 feet (mean draught). Guns: 4—5 inch (51 cal.). Machinery: Parsons turbines with reduction gear. Boilers: 2 Yarrow. H.P. (on trials) 2617 = 14.15 kts. Fuel: 728 tons oil.



1920 Photo

(Pacific Fleet.)

BEAVER (Newport News, 1910, purchased 1918). 6250 tons. Dimensions: 380 (o.a.) \times 47 \times 22½ feet (max. draught). Guns: 4—5 inch, 2—1 pdr. 1 screw. Boilers: 6 single-ended. I.H.P. 4500 = 16.5 kts. Fuel: 530 tons oil fuel. Complement, 350.



Note.—Has only one funnel now.

1922 Official Photo.

(Atlantic Fleet.)

CAMDEN (Flensburger S. B. Co., 1900, ex-German-Australian s.s. *Kiel*, seized 1917). 9000 tons (estimated). Dimensions: 403½ (o.a.) \times 48 \times 22½ feet. Guns: 4—4 inch, 2—3 pdr., 2—1 pdr. Boilers: 4 Babcock. I.H.P. 2550 = 12 kts. Coal: 975 tons. Complement, 378.

Auxiliaries—Submarine Tenders (AS)—continued.



(Atlantic Fleet.)

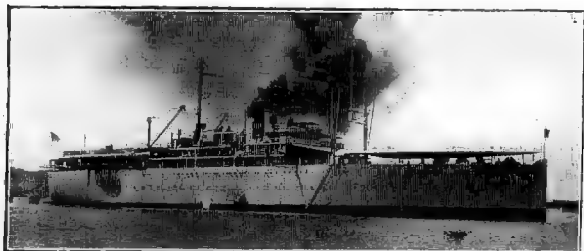
1920 Photo.

SAVANNAH (Flensburger S. B. Co., 1899, ex-Hamburg-American S.S. *Saxonia*, seized 1917). 8570 tons. Dimensions: 414½ \times 46 \times 21½ feet. Guns: 4—5 inch, 4—3 inch AA., 4—30 cal. Boilers: 4 Babcock. I.H.P. 2000 = 10.5 kts. Coal: 743 tons + 531 tons additional stowage = 1274 tons. Complement, 383.

U.S.A.—Aircraft Tenders and Mine Layers.

Aircraft Tenders (AV).

Note.—Minelayer *Aroostook*, Minesweepers *Gannet*, *Pelican*, *Teal* and *Sandpiper*, have been serving for some time past as Seaplane Tenders.



1924, Official Photo.

WRIGHT (ex-Emergency Fleet Corporation Hull No. 680, "Type B," launched at Hog Island, April 28th, 1920). Conversion effected by Tietjen & Lang Dry Dock Co., Hoboken, 1920-21. 11,500 tons. Dimensions: 418 (p.p. and o.a.) \times 58 \times 27½ feet max. draught. Guns: 2—5 inch, 51 cal., 2—3 inch, 50 cal. A.A., 4—30 cal. Designed S.H.P. 6000 = 15 kts. G.E. Curtis geared turbines and 6 Babcock & Wilcox boilers. Oil: 1629 tons. Complement, 311. Fitted as flagship.

Special Notes.—This ship now serves as Tender to Seaplanes, a large space forward with a big hatchway in weather deck being provided for stowage of spare seaplane wing sections. Other spare parts also carried for Seaplanes. Conversion work carried out allows the landing by means of booms of seaplanes in the space aft on the main deck. Foundry, smithy, carpentry, and machine shops, motor erecting shop, fabric and dope shops for repairs and maintenance of aircraft material.

Mine Layers—Second Line (OCM).

Notes.

Mine Layers are *not* classed with Auxiliary Vessels, but after Second Line Destroyers.

14 Destroyers converted into "Light Minelayers," viz., *Anthony*, *Burns*, *Hart*, *Ingraham*, *Israel*, *Lansdale*, *Luce*, *Ludlow*, *Mahan*, *Maury*, *Murray*, *Rizal*, *Sproston*, *Stribling*. All described on a previous page. Light Cruisers of *Omaha* class are fitted for minelaying.

DEPÔT SHIPS, AIRCRAFT TENDERS AND MINE LAYERS.

Mine Layers—Second Line (OCM)—continued.



OGLALA (*Aroostook* similar).

1920 Photo.

(Atlantic Fleet.)

OGLALA (Cramps, 1907. Ex-*Shawmut*, ex-S.S. *Massachusetts*, of Eastern Steamship Corpn., purchased 1917 and converted by Boston N.Yd. into Mine Planter). 4950 tons. Dimensions: 395 (o.a.) \times 52½ \times 14½ feet (mean). Guns: 1—5 inch, 51 cal., 2—3 inch A.A., 2—6 pdr., 4—1 pdr. Reciprocating engines and 8 S. E. boilers. 2 screws. H.P. 7000 = 20 kts. Oil: 607 tons. Complement 373.

(Pacific Fleet.)

AROOSTOOK (Cramps, 1907. Ex-S.S. *Bunker Hill*, of Eastern Steamship Corpn., purchased 1917 and converted by Boston N.Yd. into Mine Planter). All details as *Oglala* above, except that she has no 6 pdr. or 1 pdr. guns. At present employed as Aircraft Tender.



Photo, U. S. Navy.

(Atlantic Fleet.)

SAN FRANCISCO (Union Iron Works) (1889). Displacement, 4683 tons. Complement, 349. Dimensions: 324½ (o.a.) \times 49½ \times 18½ (mean) feet. Armament: 3—5 inch, 2—3 inch A.A., 2—6 pdr., Carries 300 Mark II mines. 4 searchlights. H.P. (trials) 9761 = 19.5 kts. 8 Babcock boilers Coal: 663 tons. Fitted as flagship.

Mine Layers—Second Line (OCM)—continued.

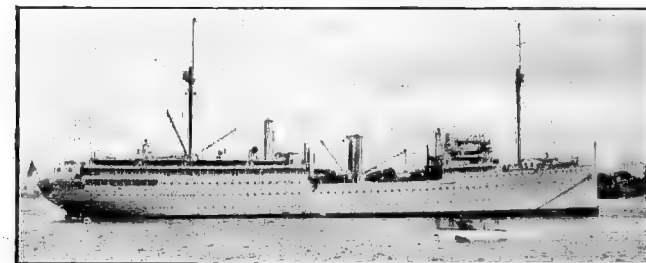


Photo, U. S. Navy.

(Pacific Fleet)

BALTIMORE (Cramps 1888). Displacement, 4413 tons. Complement, 351. Dimensions: 335 (o.a.) \times 48½ \times 19½ (mean) feet. Guns: 4—5 inch, 51 cal., 2—3 inch A.A., 4—6 pdr., 2—1 pdr. Armour: 4" deck. H.P. (trials) 8777 = 20 kts. Boilers: 8 Babcock. Coal: 1092 tons. Fitted as flagship.

Auxiliaries—Repair Ships (AR).



1925 Photo, W. W. Stewart, Esq.

(Pacific Fleet.)

MEDUSA (Puget Sound N.Yd., April 16th, 1923). 10,620 tons. Dimensions: 460 \times 70 \times 20 feet. Guns: 4—5 inch, 51 cal., 2—3 inch A.A., 2—6 pdr., 4—30 cal. Parsons geared turbines. Designed S.H.P. 7000 = 16 kts. 2 Bureau Modified Thornycroft boilers. Oil: 1834 tons. Complement, 466 (including an exceptionally full technical staff).

Note.—The *Medusa* was specially designed with a view to the execution of permanent as well as temporary repairs. She carries two 8 ton derricks, besides one 20 ton, one 10 ton and two 8 ton shear legs. Machinery is installed aft. Equipment includes a medical and hospital section.

Auxiliaries—Repair Ships (AR)—continued.



PROMETHEUS.

1926 Photo, Ian Perman, Esq.

PROMETHEUS (Mare Island N.Yd., 1908). **VESTAL** (New York N. Yd., 1908). 8100 tons, full load. Dimensions: 450 × 60 × 18 feet. Guns: 4—5 inch, 50 cal., 1—3 inch AA., 4—30 cal. Boilers: *Prometheus*, 6 Babcock; *Vestal*, 2 White-Forster. Weight of machinery: *Prometheus*, 1100 tons; *Vestal*, 789 tons. H.P. 7500 = 16 kts. Oil: *Prometheus*, 872 tons; *Vestal*, 1412 tons. Complement, 466.

Auxiliaries—Store Ships (AF).



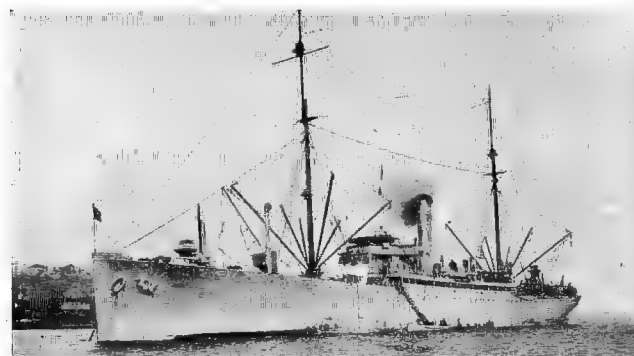
ARCTIC.

1926 Official Photo.

ARCTIC (1919), **BOREAS** (1919), **YUKON** (1920). 12,600 tons. Dimensions: 416½ × 53 × 26½ feet. Guns: 2—5 inch, 51 cal., 4—3 inch AA. (not always carried). Parsons geared turbines in *Arctic* and *Yukon*, Curtis in *Boreas*. Designed H.P. 2800 = 11 kts. Boilers: 4 Heine, except *Yukon*, 3 single-ended. Oil: 1794 tons. Complements: 166 (*Y*), 180 (*B*), 211 (*A*).

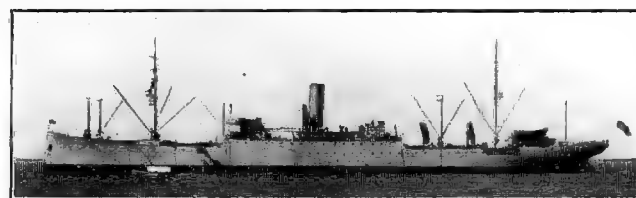
MINE LAYERS AND FLEET AUXILIARIES.

Auxiliary—Store Ships (AF)—continued.



1919 Photo.

BRIDGE (Boston N.Yd., May 18th, 1916). 8500 tons. Complement, 212. Dimensions: 423 × 55½ × 20¾ feet (mean draught). Guns: 4—5 inch, 50 cal., 1—3 inch AA., 2—3 pdr. Boilers: 2 White-Forster. H.P. 4000 = 14 kts. Reciprocating engines. 2 screws. Fuel: 1000 tons oil.



RAPPAHANNOCK.

1927 Official Photo.

RAPPAHANNOCK (Bremer-Vulkan, Vegesack, Germany, 1913, ex-North German Lloyd S.S. *Pommern*, seized 1917). 15,200 tons. Complement, 291. Dimensions: 471½ × 59½ × 24½ feet. Guns: 4—5 inch, 51 cal., 1—3 inch AA. Boilers: 4 single-ended. I.H.P. 4850 = 11.5 kts. Coal: 3060 tons.

Auxiliaries—Colliers (AC).



NEREUS.

Photo added 1921.

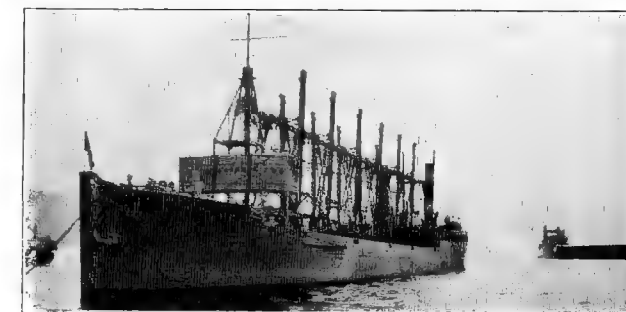
NEREUS (1913), **PROTEUS** (1912). 19,080 tons. Dimensions: 522 × 62 × 27¾ (mean). 2 screws. Boilers: 3 double-ended. H.P. 7000 = 14.5 kts. Fuel capacity (deadweight to designed draft): 10,500 tons cargo fuel, Bunker capacity, 1,925 tons. Maximum cargo capacity (close stowage): 11,800 tons coal + 1125 tons oil or 10,100 tons coal + 3050 tons oil. Guns: 4—4 inch 50 cal. Complement, 181.

Mine Layers and Auxiliaries—U.S.A. Auxiliaries—Colliers (AC)—continued.

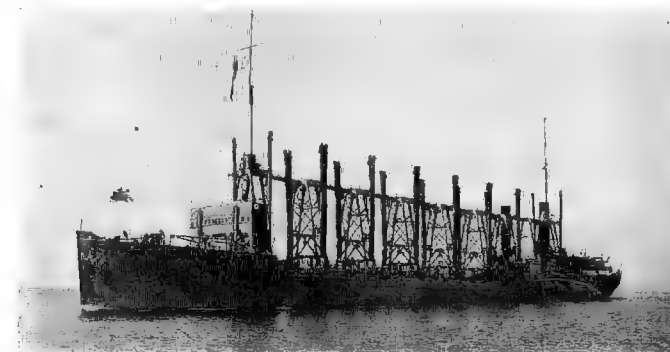


JASON.

1927 Official Photo.



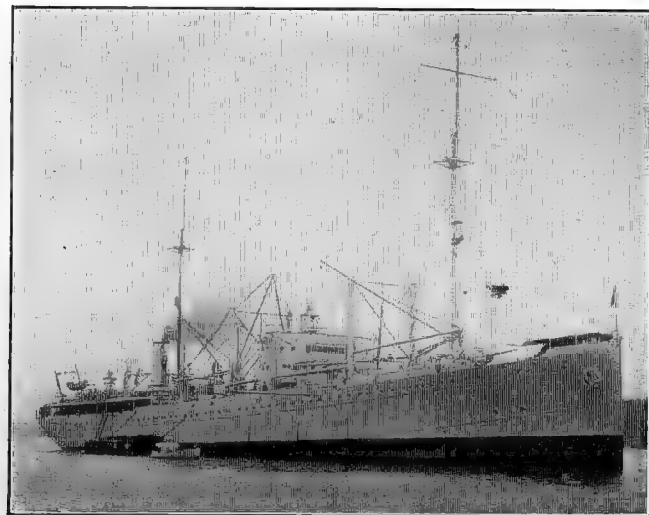
JASON (1912), **ORION** (1912). 19,250 tons. Dimensions: 536 × 65 × 27¾ feet (mean). 2 screws. Boilers: 3 double-ended. H.P. 6943 = 14 kts. Fuel capacity (deadweight to designed draft): 10,500 tons cargo fuel and 2000 tons own bunker fuel. Maximum cargo capacity (close stowage): 11,500 tons coal and 2575 tons oil. Guns: 4—4 inch. Complement, 181.



1919 Photo, O. W. Waterman.

NEPTUNE (1911). 19,480 tons. Dimensions: 542 × 65 × 27¾ (mean). 2 screws. Boilers: 3 double-ended. S.H.P. 5400 = 13 kts. Fuel capacity (deadweight to designed draft): 10,500 tons cargo fuel + 2000 tons own bunker fuel. Maximum cargo capacity (close stowage): 10,200 tons coal + 2925 tons oil or 11,700 tons coal + 1250 tons oil. Guns: 4—4 inch. Has Westinghouse geared turbines. Complement, 181.

Auxiliaries—Ammunition Ships (AE).



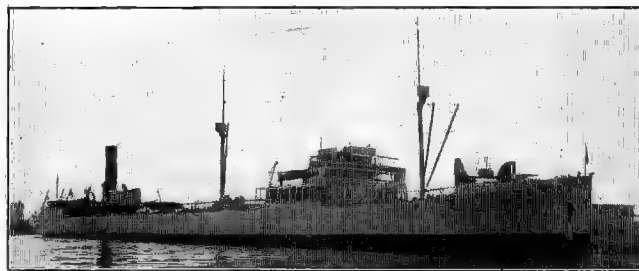
PYRO.

1921, Official Photo.

NITRO, PYRO (both launched Dec. 16th, 1919, at Puget Sound N.Yd.). 10,600 tons. Dimensions: 460 × 61 × 21 feet. Guns: 4—5 inch, 2—3 inch AA. Boilers: 4 Babcock. S.H.P. 6700 = 13.3 kts. (N.), 13.2 kts. (P.). Parsons (geared) turbines. 2 screws. Fuel capacity: 1078 tons coal (Nitro), 1493 tons oil (Pyro). Fitted with plant for powder testing and cooling, also large cold storage capacity for meat, in addition to ammunition-carrying spaces. Complement, 195.

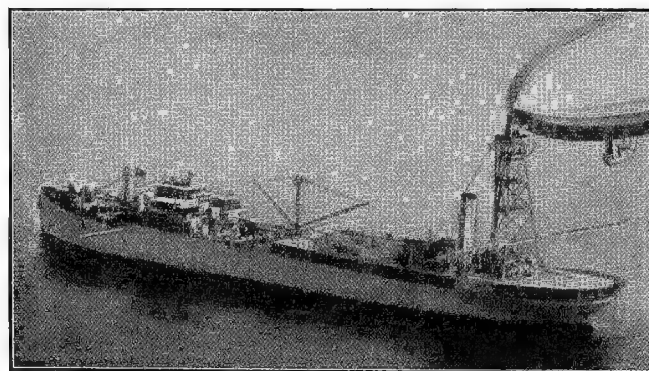
FLEET AUXILIARIES.

Auxiliaries—Oilers (AO).



TRINITY.

1927 Official Photo.



PATOKA.

1924 Official Photo, U.S. Navy.

PATOKA (1919), **RAPIDAN** (1919), **SALINAS** (1920), **TIPPECANOE** (1920), **RAMAPO** (1919), **SAPELO** (1919), **SEPULGA** (1920), **TRINITY** (1920). 16,800 tons. Dimensions: 463½ (p.p.) × 60 × 26½ feet (mean draught). Quad. Exp. reciprocating engines.† 3 S. E. boilers. I.H.P. 2900 = 10.5 kts. Guns: 2—5 inch, 51 cal., 2—3 inch AA. Max. cargo capacity: 11,145 tons oil fuel. Own fuel: 1109 tons oil. Complement, 107 (Patoka 156).

†Curtis turbine in *Trinity* and *Tippecanoe*.

Special Note.

Patoka, though classed as an oiler, is fitted with a mooring mast for aircraft and a landing platform for planes. Equipment includes workshops for repair of aircraft and storage for petrol.

KAWEAH (1919), **LARAMIE** (1920), **MATTOLE** (1920), 14,450 tons. Dimensions: 446 (o.a.) × 58 × 25½ feet. Guns: 2—5 inch, 51 cal., 2—3 inch AA. Reciprocating engines and 3 S. E. boilers. H.P. 2800 = 11 kts. Cargo capacity, 8850 tons. Own fuel, 1288 tons. Complement, 107.

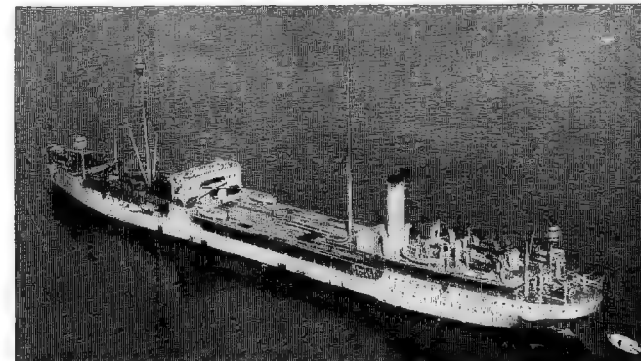
Auxiliaries—Oilers (AO)—continued.



BRAZOS.

1927 Official Photo.

BRAZOS (1919), **NECHES** (1920), **PECOS** (1921), all three by Boston N. Yd. 14,800 tons. Dimensions: 475½ (o.a.) × 56 × 26½ feet mean. Recipro. engines. 4 B. & W. boilers in *Brazos*, 4 Ward in each of others. 2 screws. I.H.P. 6000 = 14 kts. Cargo capacity, 8050 tons. Own fuel, 828 tons. Guns: 4—5 inch, 51 cal., 2—3 inch. Complements: 136 (B.), 117 (N.), 156 (P.).



CUYAMA.

1920 Photo.



KANAWHA (& MAUMEE).

1919 Photo, O. W. Waterman.

CUYAMA (1916) **MAUMEE** (1915), **KANAWHA** (1914). 14,500 tons. Dimensions: 475½ × 56 × 26½ (mean). *Cuyama* and *Kanawha* reciprocating engines, 5590 H.P. *Maumee* 2-cycle Diesel motors 5000 H.P. Boilers: 2 Babcock in *Maumee*, 4 Babcock in each of others. Speed: 14 kts. 2 screws. Fuel capacity: 8050 tons cargo oil; 824 tons own bunker oil. Guns: *Cuyama* 4—5 inch; *Maumee*, *Kanawha* 4—4 inch. Complements: 136 (C. and K.) 146 (M.).

FLEET AUXILIARIES.

Auxiliaries—Oilers (AO)—continued.

SARA THOMPSON (ex s.s. *Gut Heil*, Armstrong, 1888, purchased 1918). 5850 tons. Dimensions: $321 \times 40\frac{1}{2} \times 21\frac{5}{8}$ feet. I.H.P. 1300 = 9 kts. Cargo capacity: 3826 tons. Own fuel: 494 tons (drawn from cargo holds). (Used as receiving ship at Cavité.) Complement, 70.

ROBERT L. BARNES (1917, acquired 1918). 3850 tons. Dimensions: $258\frac{1}{2}$ (o.a.) $\times 43\frac{1}{2} \times 15$ feet. I.H.P. 1100 = 8.5 kts. Capacity: 1806 tons. Own fuel, 103 tons. (Used for Oil Storage, Guam.) Complement, 67.

Auxiliaries—Cargo Ships (AK).

(For appearance, see *Antares* under Auxiliaries—Miscellaneous.)

CAPELLA (1920), **SIRIUS** (1919), **SPICA** (1919), **VEGA** (1919). 11,450 tons. Dimensions: $401 \times 54 \times 24\frac{1}{2}$ feet. Guns: 2—5 inch, 51 cal., 4—3 inch AA. Curtis geared turbines. 3 Babcock boilers. H.P. 2500 = 11.5 kts. Oil: 1222 tons. Complement, 106.

REGULUS (1920). 10,550 tons. Dimensions: $392 \times 52 \times 24$ feet. Guns: 2—5 inch, 51 cal., 4—3 inch AA. Recipro. engines. 3 single-ended boilers. H.P. 2500 = 11 kts. Oil: 1180 tons. Complement, 106.



1924, Official Photo.

KITTERY (ex s.s. *President*, 1905). 3330 tons. Dimensions: $293\frac{3}{4}$ (o.a.) $\times 40\frac{1}{2} \times 13\frac{1}{2}$ feet. Guns: 4—3 inch. 2 screws. Boilers: 2 single-ended. I.H.P. 1400 = 15.5 kts. Coal: 351 tons. Complement, 102.

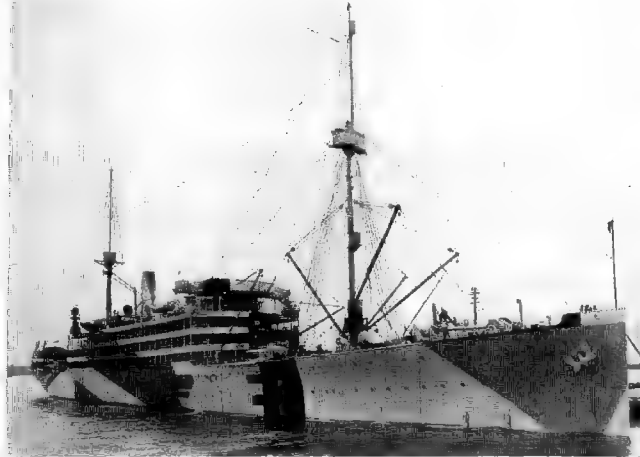
Auxiliaries—Transports (AP).



1929 Official Photo.

CHAUMONT (Hog Island, 1920). 10,700 tons. Dimensions: $448 \times 58 \times 23$ feet. Guns: Nil. 1 screw. G.E. Curtis geared turbines. Boilers: 6 Babcock. S.H.P. 6000 = 15 kts. Oil: 1473 tons. Complement, 249.

Auxiliaries—Transports (AP)—continued.



1920 Photo.

HENDERSON (1916). 10,000 tons. Complement: 424. Dimensions: $483\frac{3}{8}$ (o.a.) $\times 61 \times 20$ feet (mean draught). Guns: 8—5 inch, 51 cal., 2—3 inch, 2—3 pdr., 2—1 pdr. H.P. 4000 = 14 kts. Reciprocating engines. Boilers: 3 Babcock. 2 screws. Fuel: 1400 tons oil. Has Sperry gyro. stabilisers. To take 2000 men and 32 horses.

Note.—A second transport, *Heywood*, of same dimensions as *Henderson*, was authorised for construction several years ago, but there appears to be no prospect of her being laid down for some time to come.

Auxiliaries—Hospital Ships (AH).



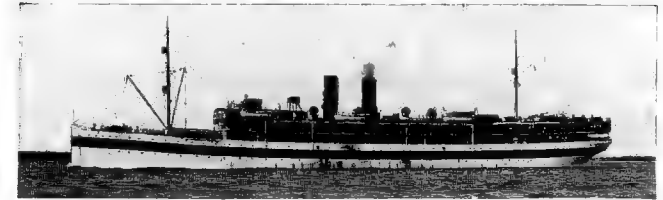
RELIEF.

1927 Official Photo.

RELIEF (Dec., 1919, Philadelphia N.Y.). 9800 tons. Dimensions: 460 (p.p.) $\times 61 \times 19\frac{1}{2}$ feet. Designed H.P. 5250 = 16 kts. Parsons (geared) turbines. 2 screws. 3 Babcock and Wilcox boilers. Oil: 1951 tons. Complement, 397. 475

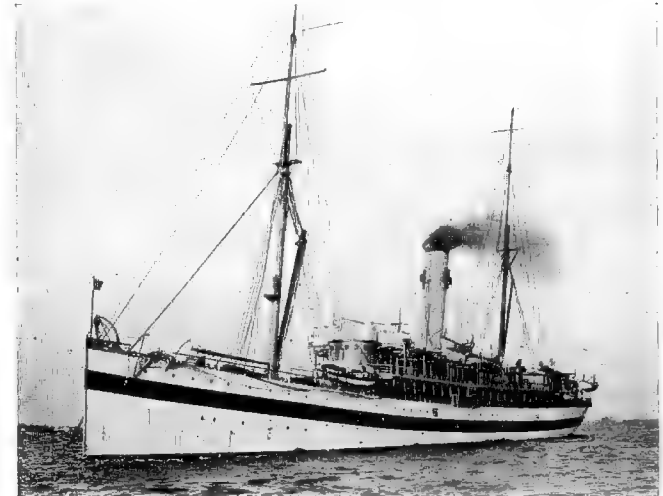
Fleet Auxiliaries—U.S.A.

Auxiliaries—Hospital Ships (AH)—continued.



1920 Photo.

MERCY (ex-Ward Liner *Saratoga*, built by Cramp, 1907), 9,450 tons. Complement 377. Dimensions: $429\frac{3}{8}$ (o.a.) $\times 50\frac{1}{2} \times 22\frac{3}{8}$ feet. Boilers: 8 S.E. I.H.P. 8500 = 18 kts. Coal: 1776 tons. Purchased 1917.



1919 Photo.

SOLACE (ex s.s. *Creole*, 1896). 5920 tons. Complement, 276. Dimensions: 377 (o.a.) $\times 44 \times 20\frac{1}{2}$ feet (mean draught). Triple expansion engines. 1 screw. Boilers: 3 double-ended. H.P. 3200 = 15 kts. Coal: 1162 tons. Purchased during War with Spain.

Auxiliaries—Oceangoing Tugs (AT).

BAY SPRING (1920). About 800 tons. Dimensions: 150 (o.a.) $\times 27\frac{3}{4} \times 14$ feet. Guns: nil. H.P. 850 = 11 kts.

ALGOMA, BAGADUCE, CONTOCOOK, IUKA, KALMIA, KEOSANQUA, KEWAYDIN, KOKA, MAHOPAC, MONTCALM (ex-Kineo), **NAPA, PINOLA, SCIOTA, SUNNADIN, TADOUSAC, TATNUCK, UMPQUA, WANDANK**. All launched 1919-20. **ALLEGHENY** (1917), **SAGAMORE** (1917). 1000 tons. Dimensions: $149\frac{1}{2}$ (p.p.) $\times 30 \times 14\frac{3}{8}$ feet. Guns: 2—3 inch AA. I.H.P. 1800 = 13 to 14 kts. Oil: 279 tons.

UNDAUNTED (1917). 450 tons. Guns: 1—3 inch AA. I.H.P. 1000 = 11.5 kts. Oil fuel 329 tons.

CHEMUNG (ex-*Pocahontas*, 1916), **WANDO** (1916). 575 tons. Dimensions: $123\frac{1}{2}$ (o.a.) $\times 26\frac{3}{4} \times 11\frac{1}{2}$ feet. Guns: 2—3 pdr. H.P. 800 = 11 kts. Oil fuel 147 tons.

ARAPAHO (1914), **TILLAMOOK** (1914). 575 tons. Guns: 2—3 pdr. H.P. 800 = 10 to 11 kts. Oil: 142 tons.

U.S.A.—Fleet Auxiliaries.

Auxiliaries—Oceangoing Tugs (AT)—continued.

LYKENS (1899). About 1000 tons. Dimensions: 157 (p.p.) × 29 × 15 feet. Guns: 1—3 inch. H.P. 1000 = 14 kts.

SONOMA (1912) and **ONTARIO** (1912). 1120 tons. Dimensions: 175 (p.p.) × 34 × 12½ feet (mean). Guns: 1—3 inch, 1—3 inch AA. Speed: 13 kts. Coal: 440 tons (average).

PATAPSCO (1908), **PATUXENT** (1908). 755 tons. Dimensions: 148 (p.p.) × 29 × 12½ feet. Guns: 1—3 inch AA. H.P. 1160 = 13 kts. Coal: 324 tons.

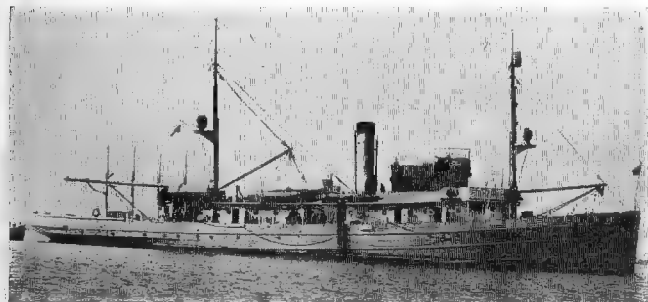
GENESEE (ex-*Monocacy*, 1905, bought 1917). 1000 tons. Guns: 2—3 inch. I.H.P. 1000 = 15 kts. Coal: 286 tons.

NAVAJO (ex-*General Hubbard*, bought 1907). 800 tons. Dimensions: 141½ (o.a.) × 27½ × 14 feet. Guns: 2—3 pdr. H.P. 935 = 12 kts.

PISCATAQUA (ex-*W. H. Brown*, 1897, bought 1898). 854 tons. Guns: 3—3 pdr. H.P. 2000 = 16 kts. Coal: 236 tons.

CHALLENGE (ex-*Defiance*, 1889, bought 1918). 515 tons. Guns: 2—3 pdr. Speed: 14 kts.

Notes.—*Carrabasset* has been transferred to Coast Guard. Other and Smaller Tugs attached to Naval Districts, rated as "Harbor Tugs."



1920 Photo.

("BIRD" CLASS—43 BOATS.)

LAPWING, OWL, ROBIN, SWALLOW, SANDERLING, CHEWINK, CORMORANT, GANNET (all built by Todd S. B. Co., Tebo Yacht Basin, Brooklyn, N. Y.).

TANAGER, ORIOLE, GREBE, MALLARD, ORTOLAN, PEACOCK (all built by Staten Id. S.B. Co., N. Y.).

AVOCET, BOBOLINK, LARK, PIGEON (all built by Baltimore D. D. & S. B. Co.).

PELICAN, FALCON, SEAGULL, TERN (all built by Gas Engine & Power Co., Morris Heights, N. Y.).

FLEET AUXILIARIES.

Mine Vessels—Mine Sweepers (AM)—continued.

TURKEY, WOODCOCK, QUAIL, PARTRIDGE (all built by Chester S. B. Co.).

SANDPIPER, WARBLER, VIREO, WILLET (all built by Philadelphia Navy Yard).

SWAN, WHIPPOORWILL, BITTERN (all built by Alabama S. B. & D. D. Co., Mobile).

WIDGEON, TEAL, BRANT (all built by Sun S. B. Co., Chester).

KINGFISHER, RAIL (both built by Puget Sound Navy Yard).

EIDER, THRUSH (both built by Pusey & Jones, Wilmington).

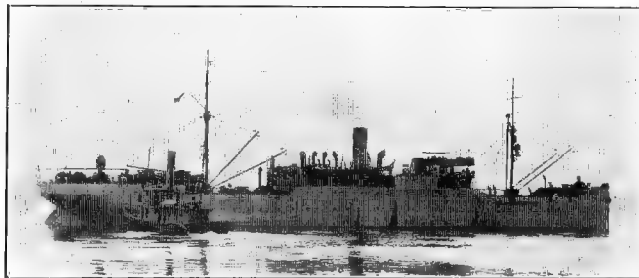
FINCH, HERON (both built by Standard S. B. Co., N. Y.).

PENGUIN (built by New Jersey D. D. & T. Co., Elizabethport).

All built 1918-19. Displacement: 950 tons normal. Dimensions: 187½ (o.a.) × 35½ × 9½ feet (mean draught). Guns: 2—3 inch AA. Machinery: 1 set triple expansion and 2 B. & W. boilers. Designed I.H.P. 1400 = 14 kts. Oil fuel only: 275 tons. Complement, 59.

Notes.—*Gannet, Pelican, Sandpiper* and *Teal* sometimes serve as Aircraft Tenders, when each carries a seaplane aft; *Chewink, Ortolan, Seagull, Quail*, are Submarine Tenders; *Pigeon* and *Penguin* are engaged in patrolling Chinese rivers; *Redwing* has been transferred to Coast Guard; *Falcon, Mallard, Ortolan, Pigeon, Widgeon* equipped as Submarine Rescue Vessels; *Whippoorwill* at Pearl Harbor.

Auxiliaries—Miscellaneous (AG).



1921, Official Photo.

ANTARES, PROCYON (both 1919). All details as *Capella* class of Cargo Ship, described on an earlier page, except complement, 197. *Procyon* is serving as flagship of Pacific Base Force, comprising Minelayers, Minesweepers, Hospital and Repair Ships, Oilers and Colliers; *Antares* flagship Training Squadron, Scouting Fleet, Atlantic. Both are fitted as Target Repair Vessels, and carry special photographic apparatus for recording results of target practice.

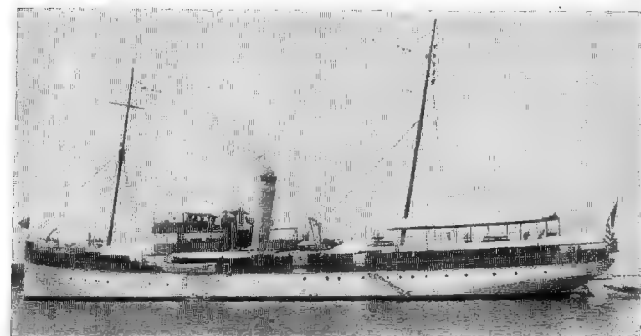
GOLD STAR (ex-*Arcturus*, 1920). All details as Cargo Ship *Regulus*, described on an earlier page, except complement, 124.

Auxiliaries—Miscellaneous (AG)—continued.



Photo added 1920.

HANNIBAL (ex-S.S. *Joseph Holland*, 1898). Ex-Fuel Ship. 3550 tons. Dimensions: 274 × 39½ × 15½ feet. Guns: 1—6 inch 40 cal., 2—3 inch AA. Complement, 163. H.P. 1100 = 9 kts. Coal: 855 tons. Has been used for Surveying Duties.



(Asiatic Fleet.)

1920 Photo, "S. H."

GENERAL ALAVA (bought 1898). 1115 tons. Complement, 59. Dimensions: 212½ (p.p.) × 29½ × 11 feet. I.H.P. 770 = 10.5 kts. Coal: 246 tons. Guns: 2—3 pdr.

For Duty with Naval Reserves.

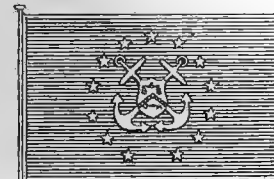
Ex-Battleship *Illinois*; Monitor *Cheyenne*; obsolete Gunboats *Wheeling, Dubuque, Paducah, Topeka, Wilmington, Essex, Wilmette*; old Yacht, *Hawk*; various Eagle Boats and Submarine Chasers previously described.

COAST GUARD.

Coast Guard—U.S.A.

Notes.

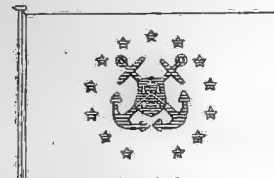
Officially Revised, 1929, from materials furnished by courtesy of the Commandant, U.S. Coast Guard, Treasury Department, Washington, D.C. Photos also official unless otherwise acknowledged.



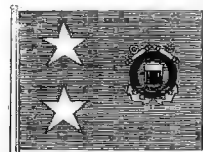
SECRETARY TREASURY



COAST GUARD
STANDARD.



ASST SECRETARY TREAS.



COMMANDANT'S
FLAG.

Red  White  Blue 

I.—ADMINISTRATION.

The U.S. Coast Guard forms part of the Military Forces of the United States, operating under the Secretary of the Treasury in peace, and as part of the Navy, subject to the orders of the Secretary of the Navy, in time of war or when the President shall so direct. (Act of January 28th, 1915.)

Secretary of the Treasury .. The Hon. A. W. Mellon.
Assistant Secretary of the Treasury* The Hon. Seymour Lowman.
Commandant Rear-Admiral F. C. Billard.

7 Chief of Divisions (Inspection, Operations, Personnel, Material, Construction and Repair, Engineering, Communications).

3 Boards (Life-Saving Apparatus, Anchorage and Movements of Vessels, Inter-Departmental Board on International Service of Ice Observation, Ice Patrol and Ocean Derelict Destruction).

* The Assistant Secretary has immediate supervision of the Coast Guard.

II.—ORGANIZATION (SHIPS).

The vessels of the service are for the most part grouped in divisions, each of which is under the command of a Division Commander, who is one of the ranking officers of the service.

The Divisions are as follows :—

- | | Headquarters. |
|---|--------------------------|
| 1. North-Western Division, Pacific Coast | Seattle, Wash. |
| 2. California | San Francisco, Cal. |
| 3. Eastern Atlantic | Boston, Mass. |
| 4. New York | New York, N.Y. |
| 5. Norfolk | Norfolk, Va. |
| 6. Gulf | Mobile, Ala. |
| 7. Lakes Great Lakes .. | Saulte Ste. Marie, Mich. |
| 8. Bering Sea Fleet, composed of vessels detailed from Northern and Southern Divisions from May to October each year. The Fleet Commander is stationed at Unalaska, Alaska. | |

Other ships, unattached to the Divisions perform independent duty.

IIa. ORGANIZATION (DISTRICTS, &c.).

Headquarters of Coast Guard at Washington, D.C.

The Coast (and Great Lakes) of the United States are divided into 13 Districts, each being under a District Commander. (Note.—These Coast Guard Districts extend over areas different to those of the "Naval Districts" of the Regular Navy.) 1st—9th District extend along Atlantic and Gulf seaboard; 10th, 11th, 12th Districts on Great Lakes; 13th District Pacific Coast and includes Station at Nome, Alaska. Number of C.G. Stations in each District varies between 8 and 41.

III.—TRAINING, REPAIR, STORE ESTABLISHMENTS.

Coast Guard Academy (Fort Trumbull, New London, Conn.). Three years' course for Line and Engineer Cadets. Entry by Competitive Examination.

Coast Guard Training Station (Fort Trumbull, New London, Conn.). Receives and trains recruits.

Coast Guard Depot (Arundel Cove, South Baltimore, Md.). For overhaul and repair of vessels stationed on Atlantic Coast, boat-building, &c.

Coast Guard Stores. At Brooklyn N.Y. and San Francisco, Cal. for purchase and issue of supplies to ships and stations.

Coast Guard Radio Repair and Supply Base. At Philadelphia N.Y. Issue and repair radio supplies to ships and stations.

IV. PERSONNEL.

(Total authorized complement, 4269).

Uniforms similar to U.S. Navy, but C.G. Shield replaces Naval Star on sleeve.

Ranks :—Rear-Admiral (1).

Engineer-in-Chief (1).

	Line.	Engineering.	Constructor.	District
Captain	15	8	..	Commander.
Commander	35	12	1	..
Lieut.-Commander ..	74	24	1	4
Lieut.	66	..	3	13
Lieut. (j.g.) ..	85*	..	..	..
Ensign .. ..	..	..	..	..

Chief Warrant Officers 2

Warrant Officers total 795.* Pay of Commissioned and W.O. as equivalent grades U.S.N. Age limit, 64.

Petty Officers and Men, 10,850. Enlist for 1, 2 or 3 years; pay as U.S.N.

* Excluding temporary entries.

V.—AVIATION.

10 Aviation Stations authorized and 2 stations with 5 seaplanes in active operation. Additional stations to be put in operation yearly.

Notes on subsequent description of Vessels.

Re-classified 1924, as (a) Cruising Cutters, 1st Class; (b) Cruising Cutters, 2nd Class; (c) Coast Guard Destroyers; (d) Harbour Cutters and Harbour Launches; (e) Patrol Boats.

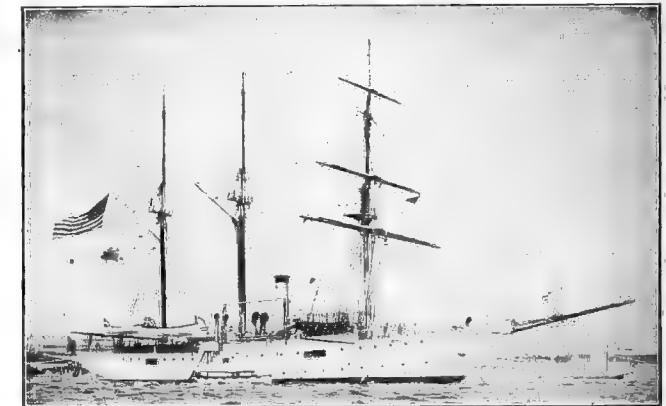
Ships arranged alphabetically. Classes comprising several ships inserted under earliest name in alphabetical order.

Length is o.a. Beam is moulded. Draught is max. Tonnages are displacement.

Stations in italics and Signal Letters in leaded type, usually after description of ships, e.g., *Acushnet* stationed at *Woods Hole, Mass.*, Signal Letters **GVHP**.

22 Cruising Cutters. First Class.

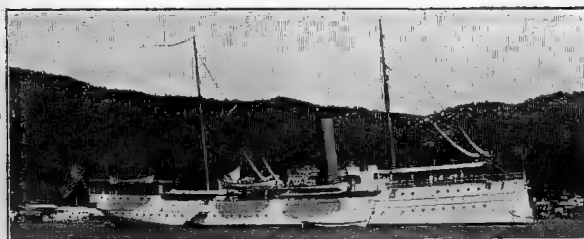
Have Headquarters at principal seaports. Cruise along coast and out to sea. Cruise in Bering Sea, Alaskan Waters and Arctic Ocean, to enforce special laws and conventions relating to these waters. Carry out Ice Patrol and Ocean Derelict destruction.



ALEXANDER HAMILTON (ex-*Vicksburg*, 1896). Composite. 1 screw. 1010 tons. Dimensions: 204 ft. 5 in. (o.a.), 168 (w.l.) × 36 × 12½ feet. Guns: 1—3 inch, 50 cal., 4—1 pdr. I.H.P. 800 = 12 kts. Coal: 249 tons. Ex-Gunboat taken over from Regular Navy, 1921. Attached to Coast Guard Academy, New London, Conn., for training Cadet Officers (GVDJ).

U.S.A.—Coast Guard.

Cruising Cutters—continued.



ALGONQUIN (1898). Steel, 1 screw. 1119 tons. Dimensions: $205\frac{1}{2} \times 32 \times 13\frac{1}{2}$ feet. Speed: 16 kts. Guns: 2—3 inch, 50 cal., 2—6 pdr. (Astoria, Oreg. **GVFL**.)



TAMPA.

Name.	Station.	Signal Letters.
HAIDA	Port Townsend, Wash.	GVKW.
MODOC	Wilmington, N.C.	GVBR.
MOJAVE	Boston, Mass.	GVBT.
TAMPA		GVKT.

All built 1921. Steel, 1 screw. 1780 tons. Dimensions: $240 \times 39 \times 16\frac{1}{2}$ feet. Guns: 2—5 inch, 1—3 inch AA., 2—6 pdr., S.H.P. 2600 = 16 kts. Machinery: Turbo-electric (General Electric Curtis Turbine).



MANNING (1897). Composite, 1 screw. 1155 tons. Dimensions: $205 \times 32 \times 13\frac{1}{2}$ feet. Speed: 15 kts. Guns: 2—3 inch, 50 cal., 2—6 pdr. (Norfolk, Va. **GVFK**.)

(For *Modoc* and *Mojave*, v. *Haida*.)

COAST GUARD—continued.

Cruising Cutters—continued.



TAMPA.

Name.	Station.	Signal Letters.
HAIDA	Port Townsend, Wash.	GVKW.
MODOC	Wilmington, N.C.	GVBR.
MOJAVE	Boston, Mass.	GVBT.
TAMPA		GVKT.

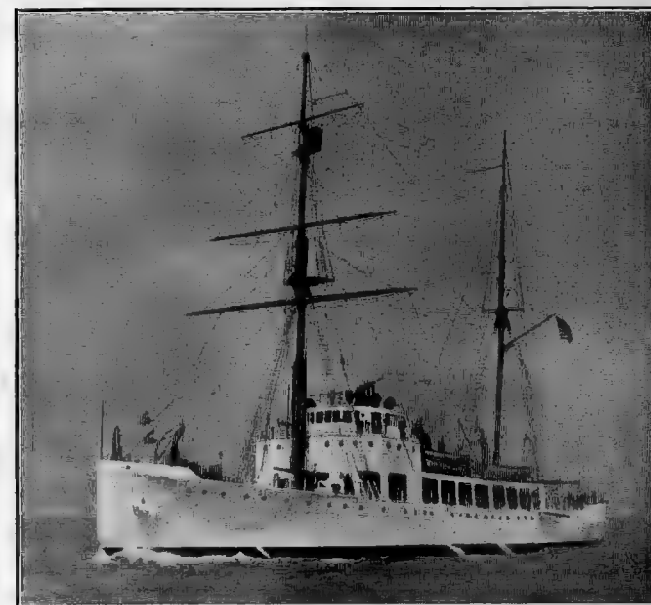
All built 1921. Steel, 1 screw. 1780 tons. Dimensions: $240 \times 39 \times 16\frac{1}{2}$ feet. Guns: 2—5 inch, 1—3 inch AA., 2—6 pdr., S.H.P. 2600 = 16 kts. Machinery: Turbo-electric (General Electric Curtis Turbine).



MANNING (1897). Composite, 1 screw. 1155 tons. Dimensions: $205 \times 32 \times 13\frac{1}{2}$ feet. Speed: 15 kts. Guns: 2—3 inch, 50 cal., 2—6 pdr. (Norfolk, Va. **GVFK**.)

(For *Modoc* and *Mojave*, v. *Haida*.)

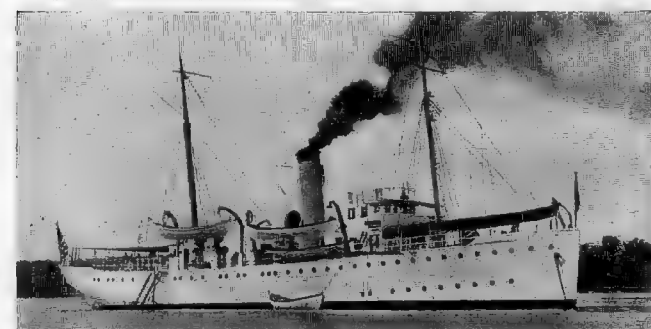
Cruising Cutters—continued.



NORTHLAND.

Photo added 1927.

NORTHLAND (Newport News Shipbuilding Co., 1927). Built of steel, hull being of exceptionally massive construction, to withstand ice pressure. Forefoot cut away to above w.l. Displacement: 2050 tons. Dimensions: 216 (o.a.) $\times 39 \times 15$ feet (mean draught). Two 6-cyl. 4-cycle Diesel engines with electric drive. Total B.H.P. 1200 = 11 kts. 1 screw. Guns: 2—4 inch, 50 cal., 2—6 pdr. For Bering Sea Patrol. (San Francisco, Cal., **GNDP**.)



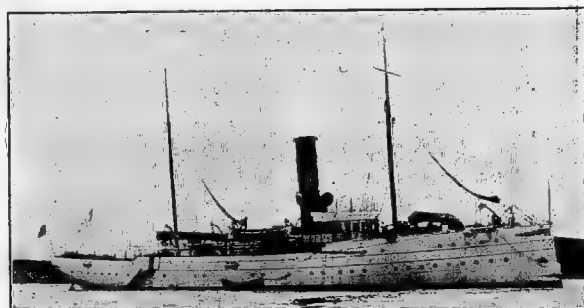
OSSIPEE (1915). Steel, 1 screw. 908 tons. Dimensions: $165\frac{1}{2} \times 32 \times 11\frac{1}{2}$ feet. Speed: 12 kts. Guns: 2—3 inch, 2—6 pdr. (Portland, Me. **GVBW**.)

(For appearance, v. photo under "Auxiliaries—Mine Sweepers," in U.S. Navy Section.)

REDWING (1919.) Ex-Navy Minesweeper, taken over 1924. Steel, 1 screw. 1210 tons. Dimensions: $187\frac{1}{2} \times 35\frac{1}{2} \times 13$ feet (mean draught). Speed: 14 kts. Guns: 2—3 inch, 23 cal., 2—1 pdr. (**GVKM**.)

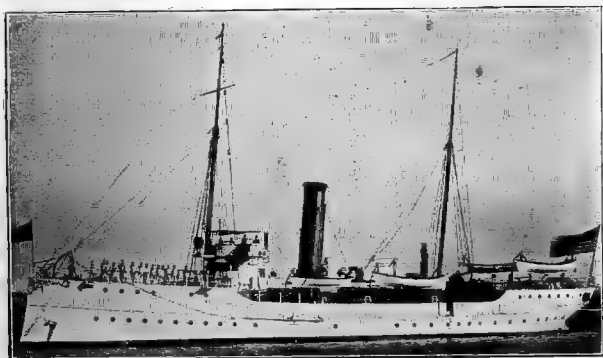
CHELAN, Name.	Station.	1929 Photo. Signal Letters.
CHELAN	Seattle, Wash.	GYKN.
CHAMPLAIN	New York, N.Y.	GNDR.
MENDOTA	Norfolk, Va.	GND8.
PONTCHARTRAIN	Mobile, Ala.	GVKP.
TAHOE	San Francisco, Calif.	GNDQ.

All built 1928-29 by Bethlehem Shipbuilding Corporation at Quincy, Mass. Steel, 1 Screw. 1975 tons. Dimensions: 250 (o.a.) $\times 42 \times 16$ feet. Turbine-Electric engines (1 main, 2 auxiliary). H.P. 300 = 16 kts. Guns: 1—5 inch, 1—3 inch, A.A., 2—6 pdrs.



GRESHAM (1897). Steel, 1 screw. 1090 tons. Dimensions: $205\frac{1}{2} \times 32 \times 12\frac{1}{2}$ feet. Speed: 14 kts. Guns: 2—3 inch, 50 cal., 2—6 pdr., 1—1 pdr. (New York, N.Y. **GVFD**.)

Cruising Cutters—continued.

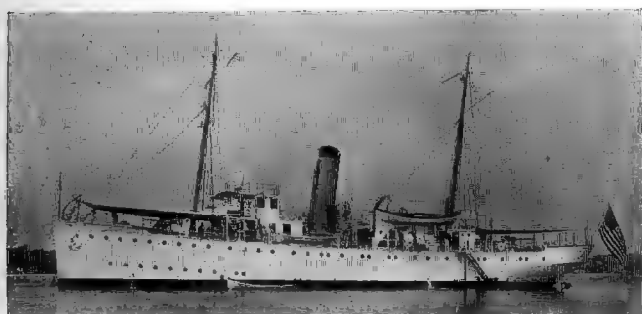


SEMINOLE (1900). Steel, 1 screw. 860 tons. Dimensions: 188 × 29½ × 12 feet. Speed: 14 kts. Guns: 2—1 pdr. (Wilmington, N.C., GVFP.)



(Rebuilt 1927. Now has single mast immediately abaft funnel.)

SENECA (1908). Steel, 1 screw. 1445 tons. Dimensions: 204 × 34 × 17½ feet. Speed: 13 kts. Guns: 2—4 inch, 50 cal., 2—1 pdr. (Tompkinsville, N.Y., GVHL.)

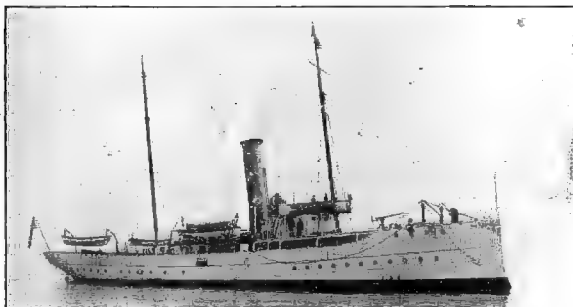


1920 Photo.

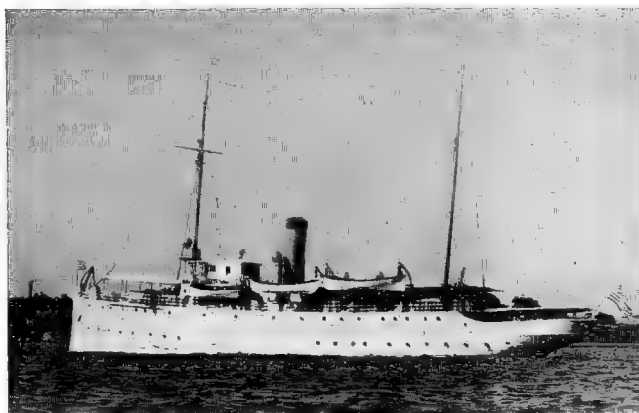
TALLAPOOSA (1915). Steel, 1 screw. 912 tons. Dimensions: 165½ × 32 × 11½ feet. Speed: 12 kts. Oil fuel only. Guns: 2—3 inch, 50 cal., 2—6 pdr. Derelict Destroyer for Gulf of Mexico. (Mobile, Ala., GVDP.) (For Tampa, v. Haida.)

COAST GUARD—continued.

Cruising Cutters—continued.



TUSCARORA (1902). Steel, 1 screw. 739 tons. Speed: 14 kts. Dimensions: 178 × 30 × 11 feet. Guns: 2—6 pdr. (Milwaukee, Wis., GVFS.)



1919 Photo, U.S. Navy Publicity Bureau.

UNALGA (1912). Steel, 1 screw. 1181 tons. Dimensions: 190 × 32½ × 14 feet. Speed: 13 kts. Guns: 2—6 pdr. (Juneau, Alaska, GVHS.)

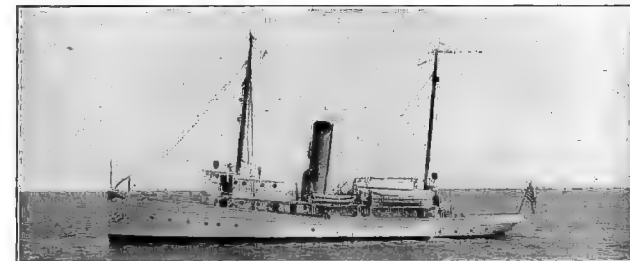


Note to Photo.—Additional searchlights are now carried and boats removed from poop.

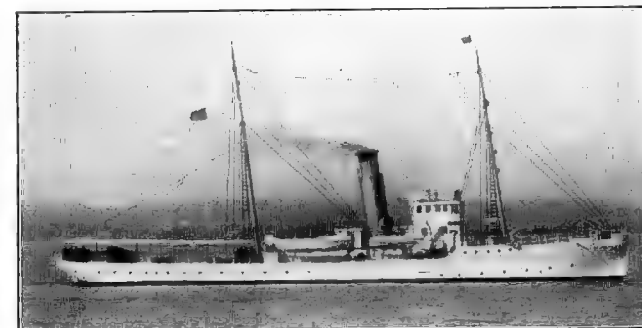
YAMACRAW (1909). Steel, 1 screw. 1082 tons. Dimensions: 191½ × 32½ × 13 feet. Speed: 13 kts. Guns: 2—4 inch, 50 cal., 2—6 pdr. (Savannah, Ga., GVHR.)

Coast Guard—U.S.A.

15 Cruising Cutters. Second Class.



ACUSHNET (1908). Steel, 1 screw. 800 tons. Dimensions: 152 × 29 × 13½ feet. Speed: 12 kts. Guns: 2—1 pdr. (Woods Hole, Mass. GVHP.)



1929 Photo.

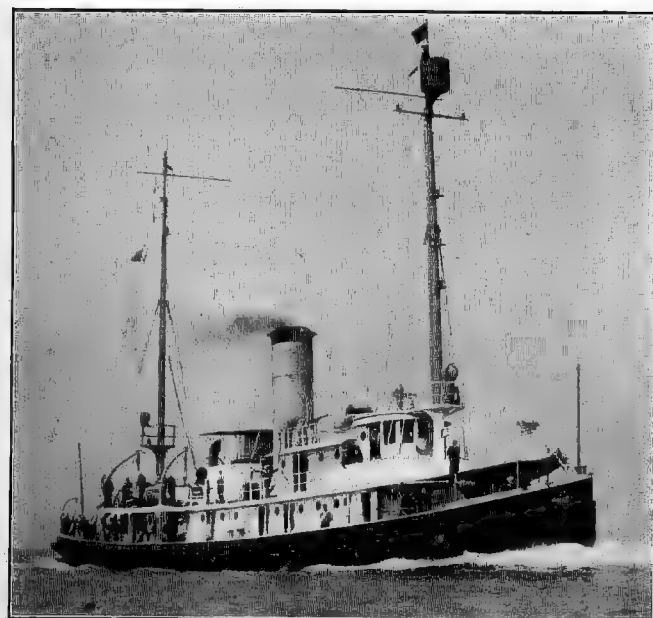
APACHE (1891). Iron, 1 screw. 740 tons. Dimensions: 185½ × 29 × 9½ feet. Speed: 12 kts. Guns: 3—6 pdr. (Baltimore, Md. GVBS.)

Photo wanted.

Name.	Station.	Signal Letters.
CAHOKIA	Eureka, Calif.	GVDK.
KICKAPOO	Rockland, Maine.	GVFQ.
MASCOUTIN	Norfolk, Va.	GVFB.
SAUKEE	Mobile, Ala.	GVFR.
TAMAROA	San Pedro, Calif.	GVCF.

Built 1919-1920 as seagoing tugs; transferred from U.S. Shipping Board 1921. Steel, 1 screw. 729-767 tons. Dimensions: 151½ × 27½ × 15 feet. Speed: 11 kts. Guns: 2—1 pdr. Kickapoo fitted as Ice Breaker. Cahokia and Tamaroa are oil-fired; others coal.

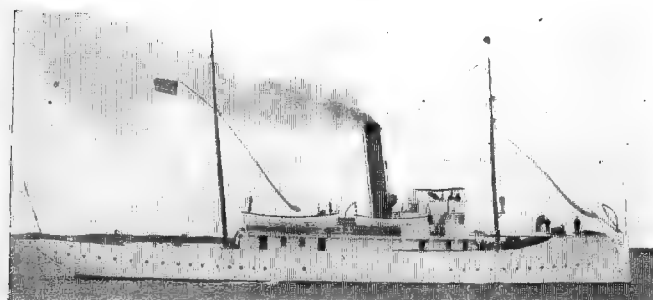
Cruising Cutters—continued.



CARRABASSET.

Photo added 1927.

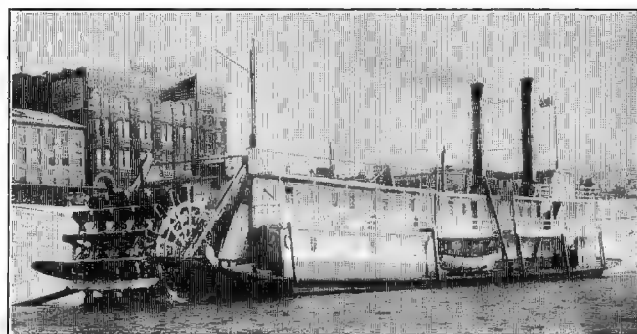
CARRABASSET (1919). Ex-Fleet Tug taken over from Navy Dept., 1924. Steel, 1 screw. 1133 tons. Dimensions: $155\frac{1}{2} \times 30 \times 17\frac{1}{2}$ feet. Speed: $13\frac{1}{2}$ kts. Guns: 2—1 pdr. (GVKL.)



1920 Photo.

COMANCHE (ex-Windom, 1896). Iron, 2 screws. 589 tons. Dimensions: $170\frac{3}{4} \times 27 \times 8\frac{3}{4}$ feet. Guns: 2—6 pdr. Speed: 13 kts. (Galveston, Texas. GVDI.)

Cruising Cutters—continued.



KANKAKEE.

1929 Photo.

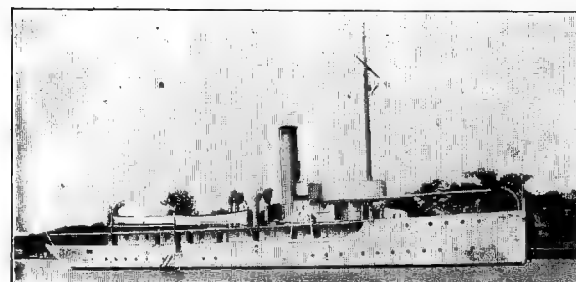
Name.	Station.
KANKAKEE	Evansville, Ind.

Built 1919. Steel hull, wood deckhouses. 383 tons. Dimensions: $182 \times 34 \times 3\frac{1}{2}$ feet. Guns: none. Speed: 12 kts.

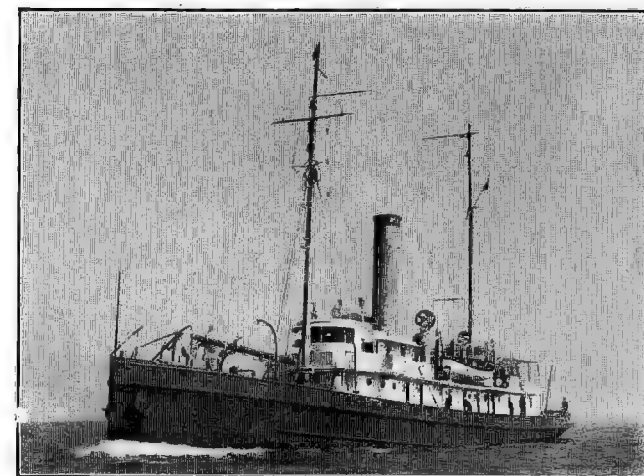
(For Kickapoo v. Cahokia.)

MANHATTAN (1918). Steel, 1 screw. Ice Breaker, Salvage Vessel, Tug and Fire Float. 406 tons. Dimensions: $120\frac{1}{2} \times 24 \times 11\frac{1}{2}$ feet. Speed: 12 kts. Guns: 2—1 pdr. (New York, N.Y. GVCL.)

(For Mascoutin v. Cahokia.)



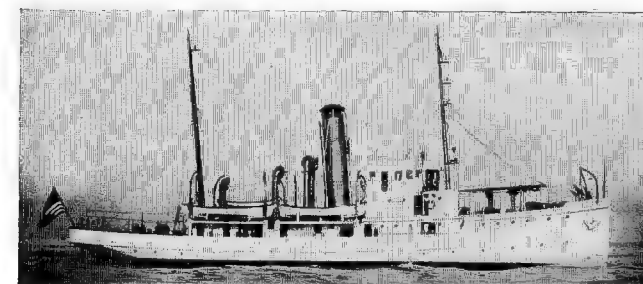
PAMLICO (1907). Steel, twin screw. 451 tons. Dimensions: $158 \times 30 \times 5\frac{3}{4}$ feet. Speed: 11 kts. Guns: 2—6 pdr. (Newbern, N.C. GVHJ.)



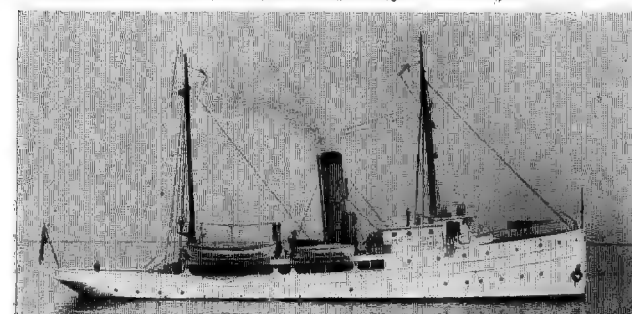
PEQUOT.

Photo added 1927.

PEQUOT (ex-Minelayer General Samuel M. Mills, built 1909, transferred from War Department 1922). Steel, 1 screw. 950 tons. Dimensions: $166\frac{1}{2} \times 32\frac{1}{2} \times 11\frac{1}{2}$ feet. (New London, Conn. GVCM.)
(For Saukee v. Cahokia.)



SHAWNEE (1921). Steel. 900 tons. Dimensions: $158\frac{1}{4} \times 30 \times 14$ feet. Guns: 2—1 pdr. Built by Union Con. Co., Oakland, Cal. (S. Francisco, Calif. GVCB.)



1920 Photo.

SNOHOMISH (1908). Steel, 1 screw. 879 tons. Dimensions: $152 \times 29 \times 15\frac{1}{2}$ feet. Speed: 12 kts. Guns: 1—3 inch, 50 cal. (Port Angeles, Wash., GVHN.)
(For Tamaroa v. Cahokia.)

12 COASTGUARD DESTROYERS (Transferred from Navy Department, 1924-26).

Coastguard Destroyers—U.S.A.

3 Allen Class.



SHAW.

1928 Photo, Lieut.-Com. G. Finkay, U.S.C.G.

- 1 Bath I.W.: **Davis** (1916). Details as *Allen*, in U.S. Navy Section.
- 1 *Mare Island Navy Yard*: **Shaw** (1916). Displacement, H.P. and speed as *Rowan*. Parsons geared (cruising on port shaft only) turbines. Boilers: 4 Thornycroft. Trials: 29'5 kts. During War, cut in two by R.M.S. *Aquitania*, steamed stern first to Portland (England) and rebuilt by H.M. Dockyard, Plymouth.
- 1 *Cramp*: **Wilkes** (1916). 1110 tons (1124 full load). Designed H.P. 17,000=29'5 kts. Parsons geared (cruising on starboard shaft only) turbines. Machinery weighs 367 tons. Boilers: 4 White-Forster. Trials: 29'58 kts.
- Guns (all three): 3—4 inch, 50 cal., 1—1 pdr. (All other particulars as given under *Allen* Class in U.S. Navy Section.)

4 Conyngham Class.

(Appearance as photo of *Wadsworth* in U.S. Navy Section.)

- 2 *Cramp*: **Conyngham** (1915), **Porter** (1915). 1690 tons (1205 full load). Designed H.P. 18,000=29½ kts. Parsons geared (cruising on starboard shaft only) turbines. Machinery weighs 375 tons. Boilers: 2 White-Forster—24,000 sq. ft. heating surface. Oil: 308 tons. Trials: *Conyngham*, 29'63 kts.; *Porter*, 29'58 kts.
- 1 *New York S. B. Co.*: **Wainwright** (1915). 1050 tons (1265 full load). Designed H.P. 17,000=29½ kts. Parsons geared (cruising on port shaft only) turbines. Machinery averages 369 tons. Boilers: 4 Normand—21,500 sq. ft. heating surface. Trials: 29'67 kts. Oil: 308 tons. (*Jacob Jones* of this type lost during war.)
- 1 *Fore River*: **Tucker** (1915). Displacements as *Conyngham*. Designed H.P. 17,000=29½ kts. Curtis geared (cruising on both shafts) turbines. Machinery weighs 369 tons. Boilers: 4 Yarrow—21,500 sq. ft. heating surface. Oil: 309 tons. Trials: 29'56 kts.
- Guns (all four): 3—4 inch, 50 cal., 1—1 pdr. (All other particulars as given under *Conyngham* Class in U.S. Navy Section.)

2 Cushing Class.

(Appearance as photo of *Nicholson*, in U.S. Navy Section.)

- 1 *New York S. B. Co.*: **Ericsson*** (1914). 1090 tons (1211 full load). Parsons geared turbines with reciprocating engine (port shaft only) weighs 364 tons. Boilers: 4 Thornycroft—26,936 sq. ft. heating surface. Trials: 29'29 kts.
- 1 Bath I.W.: **McDougal** (1914). 1025 tons (1139 full load). Two sets Parsons turbines and two reciprocating. Machinery weighs 325 tons. Boilers: 4 Normand—21,509 sq. feet heating surface. Trials: 30'7 kts.
- Guns (both): 3—4 inch, 50 cal., 1—1 pdr.

(All other particulars as given under *Cushing* Class, in U.S. Navy Section.)

*Has very low mainmast.

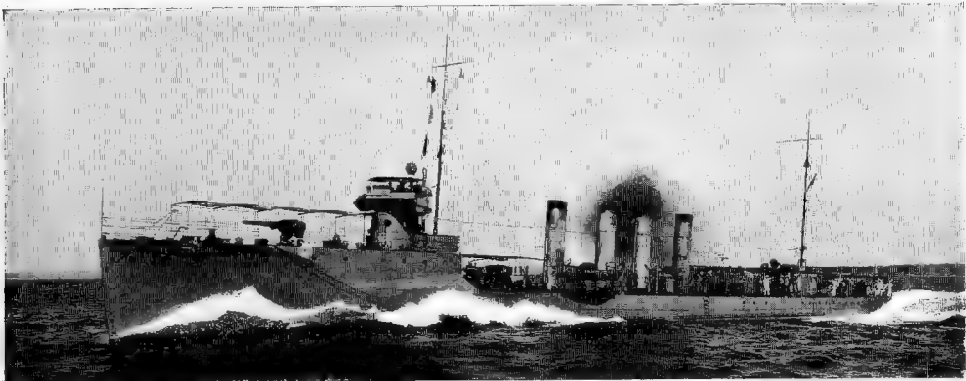
3 Aylin Class.

(Appearance as Photo of *Duncan*, in U.S. Navy Section.)

- 2 Bath I.W.: **Cassin, Cummings** (1913). 1020 tons (1139 full load). Parsons turbines and reciprocating engines (on port shaft only). Machinery: 329 tons. Boilers: 4 Normand—21,509 sq. feet heating surface. Oil fuel: 312 tons. Trials: *Cassin* 30'14, *Cummings* 30'57 kts.
- 1 *New York S. B. Co.*: **Downes** (1913). 1072 tons (1190 full load). Curtis turbines and reciprocating engines. Machinery: 386 tons. Boilers: 4 Thornycroft—26,456 sq. feet heating surface. Oil fuel: 308 tons. Trials: 29'07 kts.
- Guns (all three): 3—4 inch, 50 cal., 1—1 pdr. (All other particulars as given under *Aylin* Class, in U.S. Navy Section.)

13 Drayton Class.

(All armed with 3—3 inch, 50 cal., and 1—1 pdr.)



BEALE. (Patterson has 3 funnels.) 1919 Copyright Photo, O. W. Waterman.

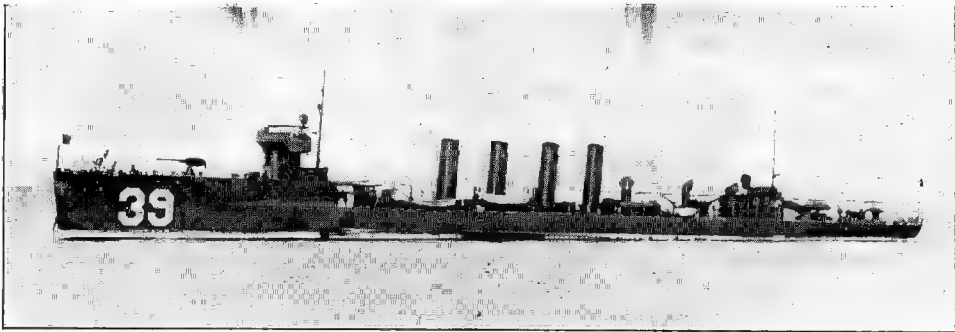
2 Cramp: **Beale** (1912), **Patterson** (1911). Parsons turbines. 3 screws. Machinery: 273 tons. Oil fuel: 227 tons. Boilers: 4 White-Foster. Trials: *Beale*, 29.65; *Patterson*, 29.69 kts.



ROE (MONAGHAN and TERRY). (Fanning has 4 funnels, like Beale.) 1919 Photo.

4 Newport News: **Fanning** (1912), **Monaghan** (1911), **Roe** (1909), **Terry** (1909). Parsons turbines. 3 screws. Machinery: 276 tons. Boilers: 4 Thornycroft. Oil fuel: 222-223 tons. Trials: *Fanning*, 29.99; *Monaghan*, 30.45; *Roe*, 29.60; *Terry*, 30.24 kts.

13 Drayton Class—continued.



HENLEY. 1924 Official Photo.

1 Fore River: **Henley** (1912). Re-engined 1916-17 with Westinghouse turbines and mechanical reduction gear (305 tons). 2 screws. Boilers: 4 Yarrow. Oil fuel: 230 tons. Trials: 30.32 kts.

(Appearance as photo of New York S.B. Co. boat, of this class, in U.S. Navy Section.)

3 New York S.B. Co.: **Ammen** (1910) **Burrows** (1910), **McCall** (1910). Parsons turbines. 3 screws. Machinery: 288 tons. Boilers: 4 Thornycroft. Oil fuel: 227 tons in *Ammen*, 224 tons in others. Trials: *Ammen*, 30.18; *Burrows*, 30.67; *McCall*, 30.66 kts.

(Appearance as photo of Bath I.W. boat, of this class, in U.S. Navy Section.)

3 Bath I.W.: **Jouett** (1912), **Trippe** (1910), **Paulding** (1910). Parsons turbines. Weight of machinery: 263, 270 and 269 tons, respectively. Boilers: 4 Normand. Oil fuel: 225 to 227 tons. Trials: *Jouett*, 32.27; *Paulding*, 32.8; *Trippe*, 30.89 kts.
(For all other particulars of boats of this class, see under U.S. Navy Section, on an earlier page.)

Signal letters of C.G. Destroyers.

<i>Ammen</i> ..	GVCH	<i>Downes</i> ..	GVCR	<i>McDougal</i> ..	GVHK	<i>Shaw</i> ..	GRPN
<i>Beale</i> ..	GVGJ	<i>Ericsson</i> ..	GVCS	<i>Monaghan</i> ..	GVJC	<i>Terry</i> ..	GVKD
<i>Burrows</i> ..	GVCK	<i>Fanning</i> ..	GVCT	<i>Patterson</i> ..	GVJD	<i>Trippe</i> ..	GVKF
<i>Cassin</i> ..	GVON	<i>Henley</i> ..	GVCW	<i>Paulding</i> ..	GVJF	<i>Tucker</i> ..	GRPS
<i>Conamgham</i> ..	GVCP	<i>Jouett</i> ..	GVDS	<i>Porter</i> ..	GVJS	<i>Wainwright</i> ..	GRPV
<i>Cummings</i> ..	GVCO	<i>McCall</i> ..	GVHF	<i>Roe</i> ..	GVJW	<i>Wilkes</i> ..	GRNS
<i>Davis</i> ..	GQJM						

COAST GUARD—continued.

Coast Guard—U.S.A.

Harbour Cutters and Harbour Launches.

Detailed to larger Maritime Ports to enforce Customs and Navigation Laws and the regulation of the anchorage and movements of vessels.

Arcata (1903). Wood. 1 screw. 138 tons. Dimensions: 85 × 17½ × 10½ feet. Speed: 11 kts. Guns: 1—1 pdr. (Port Townsend, Wash., **GVHC**.)

Calumet (1894). Iron. 1 screw. 170 tons. Dimensions: 94½ × 20½ × 9 feet. Guns: None. Speed: 12 kts. (New York, N.Y., **GVDR**.)

Name.	Station.	Signal Letters.
Chautauqua	New York N.Y.	GVJM .
Chicopee	Portland, Maine	GVJL .
Chippewa	Sault Ste. Marie, Mich.	GVJK .
Chulahoma	S. Baltimore, Md.	.....

All built 1919. Wood. 215 tons. Dimensions: 88 × 20 × 8½ feet. Speed: 10 kts. Are Ex-Navy Tugs taken over by Coastguard. *Chincoteague* and *Choptank* of this class, sold 1925.

Davey (1908). Steel, 1 screw. 182 tons. Dimensions: 92½ × 19 × 10½ feet. Guns: Nil. Speed: 10 kts. (New Orleans, La., **GVHM**.)

Golden Gate (1896). Steel, 1 screw. 240 tons. Dimensions: 110 × 20½ × 9½ feet. Speed: 12 kts. (**GVFH**.)

Guard (1914). Wood. 52 tons. Dimensions: 67 ft. 7 in. × 12½ × 6½ feet. Speed: 9 kts. (Friday Harb., Wash. **GVHW**.)

Guthrie (1895). Iron, 1 screw. 149 tons. Dimensions: 88 × 17½ × 9 feet. Speed: 11 kts. (Philadelphia, Pa., **GVBQ**.)

Hudson (1893). Iron, 1 screw. 179 tons. Dimensions: 96½ × 20 × 9 feet. Speed: 12 kts. (New York, N.Y. **GVDQ**.)

Leopard (1920). Wood. Dimensions: 94 × 24 × 12 feet. (Curtis Bay, Md.)

Mackinac (1903). Steel, 1 screw. 241 tons. Dimensions: 110 × 20½ × 10½ feet. Guns: None. Speed: 12 kts. (Boston, Mass. **GVHB**.)

Raritan (1905). Steel. 1 screw. 220 tons gross. Dimensions: 103 × 22 ft. 8 in. (New York, N.Y.)

Tioga (1916). Steel. 131 tons. Dimensions: 88½ × 20 × 8½ feet. Speed: 10 kts. (Norfolk, Va., **GVKB**.)

Winnisimmet (1903). Steel, 1 screw. 182 tons. Dimensions: 96½ × 20½ × 9 feet. Speed: 12 kts. (Norfolk, Va., **GVFW**.)

Wissahickon (1904). Steel, 1 screw. 194 tons. Dimensions: 96½ × 20½ × 9½ feet. Speed: 12 kts. (New York N.Y., **GVHD**.)

Harbour Cutters and Harbour Launches—continued.

(Ex-Submarine Chasers.)

Name	(late SC).	Station.	Signal Letters.
Cook	(438)	Grand Marais, Minn.	GVKC .
Cygan	(335)	Ketchikan, Alaska	GVKR .
Smith	(155)	Ketchikan, Alaska	GVKQ .
Tingard	(183)	San Pedro, Cal.	GVJT .

Built 1917-18, taken over 1919-20. Wood. 75 tons. Dimensions: 110 × 14½ × 6 feet. Speed: 11 kts. Guns: 1—1 pdr. (Twin screw, petrol.)

Name.	Signal Letters.	Built.	Tons.	Speed. kts.	Dimensions.
AB-1	..	1917	..	..	50 × 11 × 3½ feet.
AB-5	..	1912	32*	11	63' × 12' × 3½'
AB-6***	GVFT	1917	12**	..	62' 4" × 10' 11" × 3' 5"
AB-7	..	1915	..	9	41' × 10' × 2½'
AB-8	GVFJ	1916	..	12	60' × 13' × 2½'
AB-9***	..	1915	30*	12	58' 11" × 13'
AB-10	..	1897	..	..	47' × 10' 6" × 3' 8"
AB-11	GVFC	1903	40**	11	61½' × 13' × 5½'
AB-12	..	1917	..	14	40' × 9' × 3'
AB-13	..	1918	..	..	45' × 11½' × 4'
AB-14	..	1917	..	10	64' × 15' 8" × 5' 1"
AB-15	GVDW	1895	45**	10	63' × 11½' × 6' 1"
AB-17***	..	1910	38*	..	45' × 11' 7" × 3½'
AB-18	..	1906	..	10	52' × 11' × 3½'
AB-19	..	1923	..	..	64' 10" × 14'
AB-20	..	1923	..	..	64' 10" × 14'
AB-21	..	1922	..	..	64' 9" × 17' × 3' 8"
AB-22	..	1901	..	..	46' 7" × 12' 11" × 3'
AB-23	..	1913	12	..	49' 6" × 11' × 2' 6"
AB-24, 25	..	1928	34	77	52' × 18' 10" × 3'

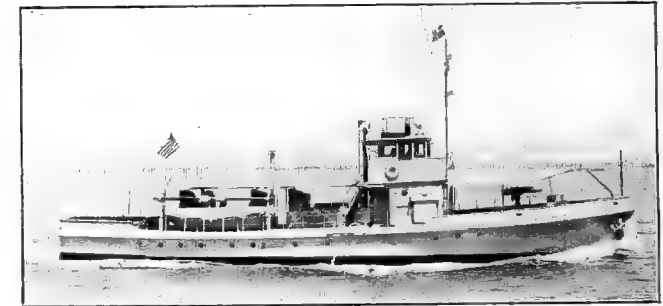
Note.—AB 15 built of steel; others all wood. AB 5, 6, 19, 20 are each armed with 1—1 pdr.

(*Tons gross. **Displacement. ***Twin screw (others petrol motors.)

Swift (1917). Wood. Dimensions: 66 × 13½ × 3½ feet. Speed: 16 kts. (Twin screw, petrol.) (San Francisco, Cal., **GVHT**.)

Patrol (1917). Wood. 23 tons. Dimensions: 68½ × 14 × 3½ feet. Speed: 9 kts.

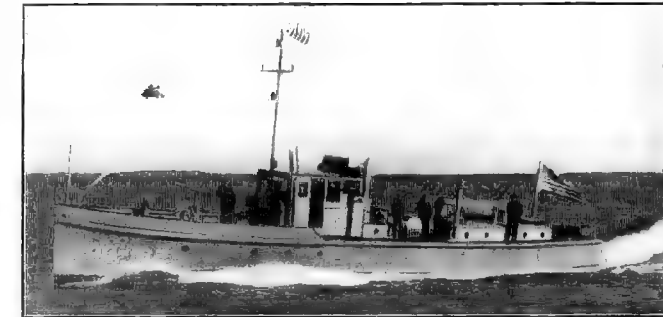
33—125 ft. steel Patrol Boats: **Active, Agassiz, Alert, Antietam, Bonham, Boutwell, Cahoon, Cartigan, Crawford, Cuyahoga, Diligence, Dix, Ewing, Faunce, Frederick Lee, General Greene, Harriet Lane, Jackson, Legare, Marion, McLane, Montgomery, Morris, Nemaha, Pulaski, Reliance, Rush, Tiger, Travis, Vigilant, Winona, Woodbury, Yeaton**. 220 tons. Dimensions: 125 × 23½ × 6½ feet. Guns: 1—3 inch, 23 cal.



PETREL.

1929 Photo.

13 steel Patrol Boats: **Corwin, Dallas, Dexter, Eagle, Forward, Gallatin, Mahoning, Nansemond, Naugatuck, Patriot, Perry, Petrel, Wolcott**. 210 tons displacement. 99'8" × 23' × 8'. Diesel engines. Guns: 1—3 inch, 23 cal.

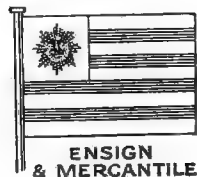


CG 182.

Photo added 1921.

194 wooden Patrol Boats: **CG-100 to CG-302**. (1924-25). 37 tons displacement. Dimensions: 74' 11" × 13' 7½" × 4'. Gasoline engine. Guns: 1—1 pdr. (CG113, 114, 126, 188, 217, 230, 238, 239, 245 have been lost.)

URUGUAY.



URUGUAYAN FLEET.

RECOGNITION SILHOUETTES.

Scale: 1 inch = 160 feet.



Vanguardia class.



Corsario class.



B. de R. Branco.



18 DE JULIO.



URUGUAY.



MONTE VIDEO.

Minister of War and Marine : General Estanislao Mendoza y Duran.

Director of Navy : Captain F. Garcia Martinez.

Personnel : 1306.

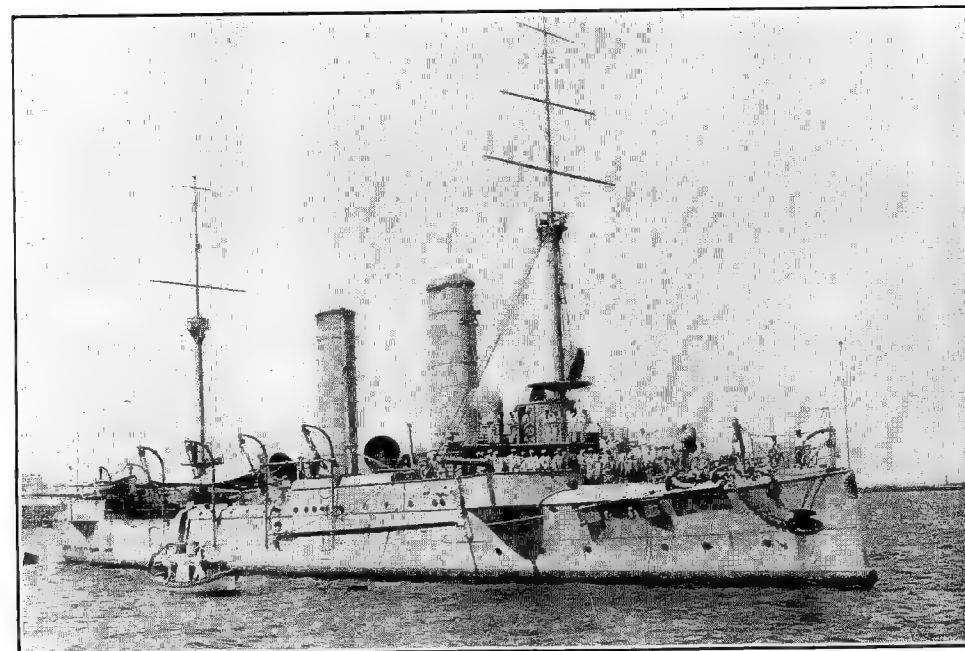
Naval Attaché, London : Lieut. Carlos Travieso.

Mercantile Marine : (From "Lloyd's Register," 1928 figures.) Total gross tonnage, 50,601.

Ports, Yards, &c.

MONTEVIDEO.—There is a fort here, but only for returning salutes. The National Dock (Dique Nacional) is operated by the Naval Authorities. Length, 459 feet. Breadth, 55 feet. Maximum depth, 17 feet. Steam and electric pumps can empty dock in eight hours. Dique Mauá (south of city) is property of Monte Video Gas Co. Dimensions: 272 × 50 × 12 feet 4 inches to 15 feet 2 inches. Has 2 steam pumps and 25 ton crane, also fixed and moving cranes. The firm Varadero del Cerro have a yard, well equipped for repairs, with a small slipway. The National Port Administration bought the Varadero Lussich, a repairing yard with a small slipway during 1919.

Old Cruiser.



1918 Photo, A. J. Carbone.

MONTEVIDEO (ex-24 de Agosto, ex-Dogali, ex-Salamina, Elswick, 1890, purchased from Italy, 1908). 2050 tons. Complement, 250. Dimensions: 250 (p.p.) × 37 × 16½ feet (max. draught). Guns: 4—6 inch, 6—3 pdr., 6 M.G. Torpedo tubes: 4 above water. Armour: 2"—1" deck, 4½" gun shields, 2" conning tower. Machinery: 2 sets horizontal and 4 double-ended boilers. H.P. 7500 = 17 kts. Coal: 480 tons.

MISCELLANEOUS.

Miscellaneous—URUGUAY

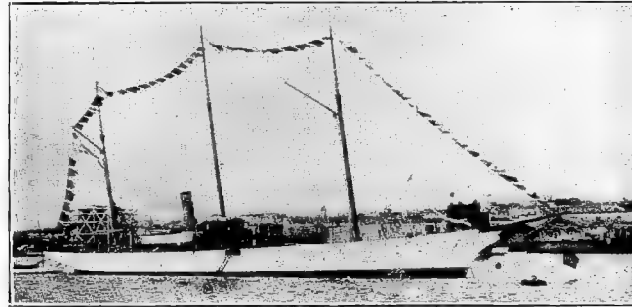
Torpedo Gunboat & Training Ship.



URUGUAY (Vulkan, Stettin, 1910). 1150 tons. Complement, 125. Dimensions: $278\frac{1}{2}$ (p.p.) \times $30\frac{5}{8}$ \times 12 feet (max. draught). Guns (Skoda): 2—4.7 inch, 45 cal., 4—12 pdr., 6—1 pdr. (Vickers). 4 M.G. Torpedo tubes: 2—18 inch above water. Armour: $\frac{2}{3}$ " nickel steel over boilers and engines. 4 Normand boilers. H.P. 8,000=23 kts. Coal: 210 tons=3,000 miles at 10 kts.

Note.—Is fitted for service as Training Ship for midshipmen. Old Gunboat, *Gen. Suarez*, is a Harbour Training Ship.

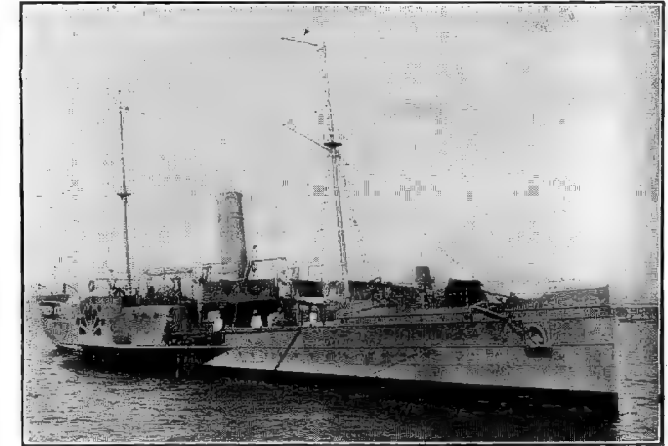
Training Ship.



Now rigged as Silhouette.

DIEZ Y OCHO DE JULIO. 678 tons. Complement, 85. 4 small guns and 2 machine guns. Speed, 12 kts. Re-fitted and re-boilered 1920.

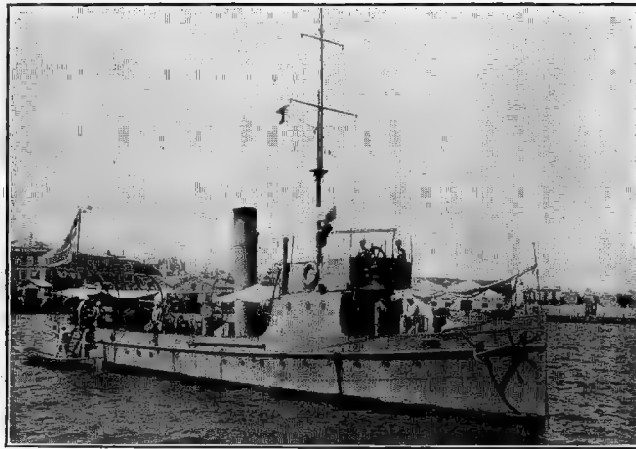
Gunboat.



1918 Photo, A. J. Carbone.

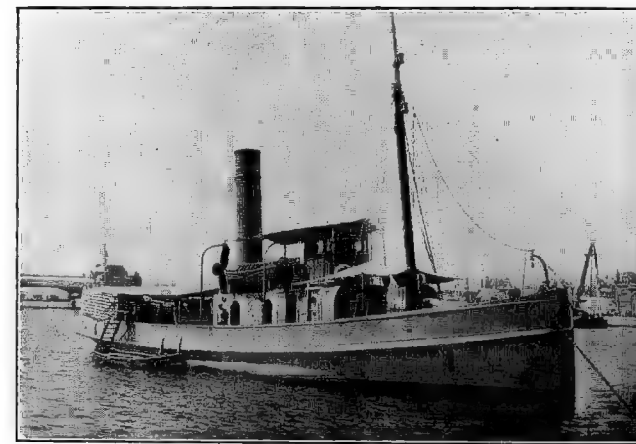
BARON DE RIO BRANCO (ex-Maldonado). Old paddle-wheel gunboat. 300 tons. Carries 4 small Q.F. and 2 M.G. Speed, 14 kts.

Tenders.



VANGUARDIA class.

1918 Photo, A. J. Carbone.

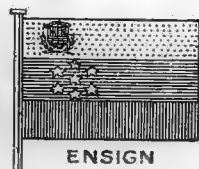


CORSARIO class.

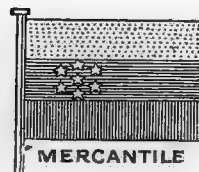
1918 Photo, A. J. Carbone.

INGENERIO, LA VALLEJA, ORIENTAL, OYARVIDE. These are four armed tugs, built about 1908, displace about 60 tons each. Guns: 3 pdr. or M.G. Speed, 13 kts. Three other tugs, *Chapicuy*, *Corsario*, *Yaguary*, also exist, and are classified as tenders. No information has been supplied to assist in determining which of the seven ships named above belong to *Vanguardia* class or which to *Corsario* class.

VENEZUELA.



ENSIGN



MERCANTILE

Personnel :

Minister of War and Marine : General C. Jiménez Rebolledo.

Warship Port : Puerto Cabello. Steel floating dock here $282 \times 90 \times 22$ feet. (2400 tons capacity) built in five sections on self-docking system, and worked by electricity. Also a wooden floating dock, $180 \times 60 \times 19$ feet (1200 tons capacity). Both these docks are Government property.

Mercantile Marine : ("Lloyd's Register," 1929 figures) Total gross tonnage, 59,674.

RECOGNITION SILHOUETTES.

Scale 1 inch = 160 feet.



MIRANDA.



J. F. RIBAS.



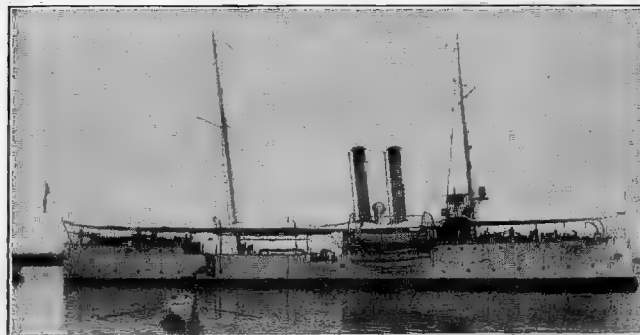
GENERAL SALOM.



M. SUCRE.

VENEZUELAN FLEET.

Gunboats.



1918 Photo, by courtesy of T. Ifor Rees, Esq.

MARISCAL SUCRE (ex-Spanish *Isla de Cuba*, 1886, captured by U.S., 1898, and sold to Venezuela, 1912). 1125 tons. Dimensions: $192 \times 30 \times 12\frac{1}{2}$ feet (Mean draught) 13 feet (Max. draught). Guns: 2—4 inch, 2—6 pdr., 6—3 pdr., 2—1* pdr. H.P. 2000 = 13 kts., max. continuous speed, 10 kts. Coal: 200 tons. Endurance: 2200 miles at 9.5 kts. Complement 100.

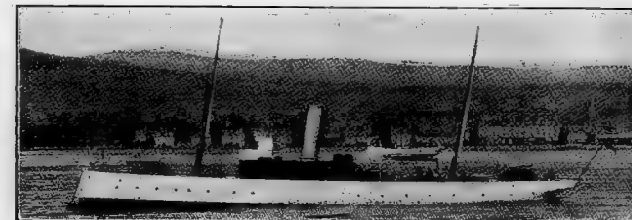
* 1—1 pdr. transferable to boat mounting.



1920 Photo, by courtesy of T. Ifor Rees, Esq.

GENERAL SALOM (ex-*Restaurador*, purchased 1900; built as U.S. private yacht *Atlanta*, 1884). 750 tons. Dimensions: $240 \times 26 \times 13$ feet (max. draught). Guns: 1—12 pdr., 4—6 pdr., 1 machine. H.P. 1900=10 kts., max. continuous speed 8 kts. Coal: 200 tons. Endurance: 2000 miles at 8 kts. Complement 65.

Gunboats—continued.



MIRANDA (Clydebank, 1895; purchased from Spain, 1898). 200 tons. Dimensions: $135 \times 19 \times 8$ feet. Guns: 1—6 pdr. H.P. 315=10 kts. Coal: 36 tons. Endurance: 850 miles at 8 kts. Complement 46. Carries 30 Mauser rifles.

Armed Tug.



Photo by favour of Ellis Grey & Co., N.Y.

JOSÉ FELIX RIBAS (ex-*Zumbador*, built 1894). 300 tons. Dimensions: $127 \times 23 \times 12$ feet. Guns: 2—6 pdr. Speed, 10 kts. Coal: 60 tons. Endurance: 1440 miles at 10 kts. Complement 44. (Being reconstructed).

Transport.

Brigantine **Antonio Diaz**, used as Naval Coal transport. 300 tons. Dimensions: $109 \times 24.5 \times 11$ feet. Complement 16. Is armed to some extent.

LIST OF BUILDERS OF MARINE DIESEL ENGINES.

Marine Diesel Engines.

The following data supplied by courtesy of the "Motor Ship Reference Book" for 1929.

BRITISH SECTION.

BUILDERS	ENGINE	TWO OR FOUR STROKE CYCLE
Armstrong, Whitworth & Co., Ltd., Sir W. G., Newcastle-on-Tyne	Sulzer.	Two-stroke, single acting.
	Still.	Two-stroke steam and oil, double acting.
Barclay, Curle & Co. Ltd., Whiteinch, Glasgow ..	Doxford.	Two-stroke, opposed piston.
	North British.	Four-stroke, single acting.
Beardmore & Co., Ltd., William, Naval Construction Works, Dalnair	Tosi.	Four-stroke single acting.
Brown & Co., Ltd., John, Clydebank, Glasgow ..	Sulzer.	Two-stroke, single acting.
	Camellaird-Fullagar.	Two-stroke, opposed piston.
Camellaird & Co., Ltd., Birkenhead Shipbuilding and Engineering Works, Birkenhead	Camellaird-Fullagar.	Two-stroke, opposed piston.
Denny & Bros., Ltd., William, Dumbarton	Sulzer.	Two-stroke, single acting.
	Still.	Two-stroke steam and oil, double acting.
Doxford & Co., Ltd., William, Pallion Works, Sunderland.	Doxford.	Two-stroke, opposed piston.
Fairfield Shipbuilding & Engineering Co., Ltd., Govan, Glasgow	Sulzer.	Two-stroke, single acting.
	Doxford.	Two-stroke, opposed piston.
Harland & Wolff, Ltd., Belfast	Burmeister & Wain.	Four-stroke, single and double acting.
Hawthorn, Leslie & Co., Ltd., Newcastle-on-Tyne ..	Werkspoor.	Four-stroke, single and double acting.
	Fiat.	Two-stroke, single acting.
Kincaid & Co., Ltd., John, Greenock	Harland & Wolff. Burmeister & Wain.	Four-stroke, single and double acting.
Mirrlees, Bickerton & Day, Ltd., Hazel Grove, near Stockport	Nobel.	Two-stroke, single acting.
North Eastern Marine Engineering Co., Ltd., Wallsend-on-Tyne	Werkspoor.	Four-stroke, single and double acting.
Palmer's Shipbuilding & Iron Co., Ltd., Hebburn-on- Tyne	Camellaird-Fullagar.	Two-stroke, opposed piston.
Richardsons, Westgarth & Co., Ltd., Hartlepool ..	Doxford.	Two-stroke, opposed piston.
	Richardson.	Two-stroke, double acting.
Rowan & Co., Ltd., David, Glasgow	Camellaird-Fullagar.	Two-stroke, opposed piston.
Scotts' Shipbuilding & Engineering Co., Ltd., Greenock	Still.	Two-stroke steam and oil, double acting.

BRITISH—continued.

BUILDERS	ENGINE	TWO OR FOUR STROKE CYCLE
Smith's Dock Co., Ltd., South Shields	Camellaird-Fullagar.	Two-stroke, opposed piston.
Stephen & Sons, Ltd., Alexander, Govan, Glasgow ..	Sulzer.	Two-stroke, single acting.
Swan Hunter & Wigham Richardson, Ltd., Wallsend Shipyard, Wallsend	Neptune.	Two-stroke, single acting.
	Polar.	Two-stroke, single acting.
Vickers-Armstrongs, Ltd., Barrow-in-Furness ..	Vickers.	Four-stroke, single acting.
	M.A.N.	Two-stroke, single and double acting.
Wallsend Slipway & Engineering Co., Ltd., Wallsend- on-Tyne	Sulzer.	Two-stroke, single acting.
Workman Clark & Co., Ltd., Belfast.	Sulzer.	Two-stroke, single acting.
	Doxford.	Two-stroke, opposed piston.
Worthington Simpson Ltd., London and Newark ..	Worthington.	Two-stroke, single and double acting. Four-stroke, single acting.

AMERICA, UNITED STATES.

(Abridged to exclude Diesel engines built in comparatively lower powers only.)

BUILDERS	ENGINE	TWO OR FOUR STROKE CYCLE
American Brown-Boveri Corporation (formerly New York Shipbuilding Corporation, Camden, N.J.)	Werkspoor.	Four-stroke, single acting.
Bethlehem Shipbuilding Corporation, Quincy, Mass.	Bethlehem.	Two-stroke, single acting.
Busch-Sulzer Bros. Diesel Engine Co., St. Louis, Mo.	Sulzer.	Two-stroke, single acting.
Cramp & Sons' Ship & Engine Co., Wm., Philadelphia, Pa.	Burmeister & Wain.	Four-stroke, single acting.
Falk Corporation, Milwaukee, Wis.	Falk.	Four-stroke, single acting.
McIntosh & Seymour Corporation, Auburn, New York	McIntosh & Seymour.	Four-stroke, single acting.
New London Ship & Engine Co., Groton, Conn. ..	Nelseco.	Four-stroke, single acting.
	M.A.N.	Two-stroke, double acting.
Nordberg Mfg. Co., Milwaukee	Fiat.	Two-stroke, single acting.
Newport News Shipbuilding & Dry Dock Co., Va. ..	Werkspoor.	Four-stroke, single acting.
Pacific Diesel Engine Co., Oakland, California ..	Werkspoor.	Four-stroke, single acting.
Sun Shipbuilding & Dry Dock Co., Chester, Pa. ..	Doxford.	Two-stroke, opposed piston.
Winton Engine Works, Cleveland, Ohio	Winton.	Four-stroke, single acting.
Worthington Pump Co., New York	Worthington.	Two-stroke, single acting and double acting.

DENMARK.

BUILDERS	ENGINE	TWO OR FOUR STROKE CYCLE
Burmeister & Wain, Copenhagen	Burmeister & Wain.	Four-stroke, single and double acting; Two-stroke, double acting.
Danish Diesel Motor Works, Holeby	Holeby.	Four-stroke, single acting.
Frichs Diesel Engine Works, Aarhus	Frichs.	Four-stroke, single acting.

SWEDEN.

Atlas Diesel A/B, Stockholm	Polar.	Two-stroke and four- stroke, single acting.
Aktiebolaget Bofors, Bofors	Werkspoor.	Four-stroke, single acting.
Eriksbergs Mek. Verkstads A/B, Gothenburg	Burmeister & Wain.	Four-stroke, single acting.
A. B. Götaverken, Gothenburg	Burmeister & Wain.	Four-stroke, single and double acting.
Kockums Mek. Verkstads A/B, Malmö	M.A.N.	Four-stroke, single acting, and two- stroke, double acting.
Lindholmen Motala A/B, Gothenburg	Doxford.	Two-stroke, opposed piston.
Nobel Diesel A/B, Nynashamn	Nobel.	Two-stroke, single acting.

ITALY.

Cantiere San Rocco Muggia, Trieste	Burmeister & Wain.	Four-stroke, single acting.
Fratelli Orlando, Leghorn	Still.	Two-stroke, steam and oil, double acting.
Stabilimento Tecnico Triestino, Trieste	Burmeister & Wain. Sulzer.	Four-stroke, single and double acting. Two-stroke, single acting.
Soc. An. It. Gio. Ansaldo, Genoa	Sulzer. Ansaldo.	Two-stroke single acting.
Cantiere Officine Savoia, Sestri Ponente	M.A.N.	Four-stroke, single acting. Two-stroke, double acting.
Fiat Stabilimento Grandi Motori, Turin	Fiat.	Two-stroke, single acting.
Franco Tosi, Legnano	Tosi.	Four-stroke, single acting. Two-stroke, single acting.
Officine Meccaniche e Navali di Napoli, Naples	Krupp.	Two-stroke and four-stroke, single acting.

NORWAY.

A.B. Akers Mek. Verksted, Oslo	Burmeister & Wain.	Four-stroke, single acting.
Royal Norwegian Navy, Oslo	Sulzer.	Two-stroke, single acting.
A.S. Thunes Mek. Verksted, Oslo	Sulzer.	Two-stroke, single acting.

GERMANY.

BUILDERS	ENGINE	TWO OR FOUR STROKE CYCLE
Deutsche Oelmaschinen Gesellschaft Hamburg (Deutsche Werft-A.E.G.)	Burmeister & Wain.	Four-stroke, single and double acting.
Gebrüder Sulzer, A.G., Ludwigshafen-on-Rhine	Sulzer.	Two stroke, single acting.
Howaldtswerke, Kiel	Sulzer.	Two-stroke, single acting.
G. Seebeck, A.G., Geestemünde	Sulzer.	Two-stroke, single acting.
Joh. C. Tecklenborg A.-G., Schiffswerft und Mas- chinenfabrik, Geestemünde	M.A.N.	Four-stroke, single acting. Two-stroke, double acting.
Allgemeine Elektrizitäts Gesellschaft	A.E.G. Hesselman.	Two-stroke, double acting.
Blohm & Voss, Hamburg	M.A.N.	Four-stroke, single acting. Two-stroke, double acting.
Maschinenfabrik Augsburg-Nürnberg A.G., Augsburg and Nuremberg	M.A.N.	Four-stroke, single acting. Two-stroke, double acting.
A.G. Motorenfabrik Deutz, Cologne	Deutz.	Four-stroke, single acting.
Actien Gesellschaft "Weser," Bremen	M.A.N.	Four-stroke, single acting. Two-stroke, double acting.
Vulcan Werke A/G., Hamburg	M.A.N.	Four-stroke, single acting. Two-stroke, double acting.
Bremer Vulcan Schiffbau und Maschinenfabrik, Vegesack	M.A.N.	Four-stroke, single acting. Two-stroke, double acting.
Benz Motoren-Werke, Mannheim	Polar-Benz.	Two and four-stroke, single acting.
Fr. Krupp, A.G., Kiel	Krupp.	Two and four-stroke, single acting. Two-stroke, double acting.
Deutsche Werke, Kiel	Deutsche-Werke.	Four-stroke, single acting. Two-stroke, double acting.
Reiherstieg Schiffswerfte und Maschinenfabrik, Hamburg	Benz.	Four-stroke, single acting.
F. Schichau, Elbing	Sulzer.	Two-stroke, single acting.

HOLLAND.

N.V. Wilton's Machinefabriek en Scheepswerf, Rotterdam	Krupp.	Four-stroke, single acting.
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LIST OF BUILDERS OF MARINE DIESEL ENGINES--continued.

Marine Diesel Engines.

HOLLAND--continued.

BUILDERS	ENGINE	TWO OR FOUR STROKE CYCLE
Koninklijke Maatschappij "de Schelde," Flushing	Sulzer.	Two-stroke, single acting.
J. & K. Smit's Scheepswerven en Machinenfabrieken, Kinderdijk	M.A.N.	Four-stroke, single acting. Two-stroke, double acting.
Maatschappij voor Scheeps-en-Werktuig-Bouw, "Fijenoord," Rotterdam	M.A.N.	Four-stroke, single acting. Two-stroke, double acting.
Burgerhout's Machinefabriek en Scheepswerf, Rotterdam	Nobel.	Two-stroke, single acting.
Werkspoor, Amsterdam	Werkspoor.	Four-stroke, single and double acting.
Rotterdam Dry Dock Co.	Werkspoor.	Four-stroke, single and double acting.

RUSSIA.

Pervig Savod Russki Diesel, Leningrad	Nobel.	Four-stroke, single acting.
S.A. des Ateliers de Kolomna, Leningrad	Sulzer.	Two-stroke, single acting.
S.A. des Ateliers de Sormovo, Leningrad	Sulzer.	Two-stroke, single acting.
Nikolaieff Shipyard	M.A.N.	Two-stroke, single acting.
	Sulzer.	Two-stroke, single acting.

SPAIN.

Soc. Esp. de Construcciones Metalicas, Bilbao and Madrid	Sulzer.	Two-stroke, single acting.
La Sociedad Española de Construcción Naval, Bilbao	Vickers.	Four-stroke, single acting.
Union Naval de Levante S.A., Madrid	Krupp.	Two and four-stroke, single acting.
Maquinista Terrestre y Marítima S.A., Barcelona	Krupp.	Two and four-stroke, single acting.

SWITZERLAND.

Sulzer Bros., Winterthur	Sulzer.	Two-stroke, single acting.
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BELGIUM.

Soc. Anon. John Cockerill, Seraing	Burmeister & Wain.	Four-stroke, single acting.
S.E.M. (Carels), Ghent.	Worthington.	Two-stroke, double acting.
	Ingersoll-Rand.	Four-stroke, single acting.

JAPAN.

Kawasaki Dockyard Co., Kobe	Camellaird-Fullagar.	Two-stroke, opposed piston.
	M.A.N.	Four-stroke, single acting. Two-stroke, double acting.

JAPAN--continued.

BUILDERS	ENGINE	TWO OR FOUR STROKE CYCLE
Imperial Japanese Navy, Tokio	Sulzer.	Two-stroke, single acting.
Susuki & Co., Kobe	Sulzer.	Two-stroke, single acting.
Mitsubishi Zosen Kaisha, Ltd., Tokio—Kobe Works	Vickers.	Four-stroke, single acting.
Mitsubishi Zosen Kaisha, Ltd., Tokio—Nagasaki Works	Sulzer.	Two-stroke, single acting.
Mitsui Bussan Kaisha	Burmeister & Wain.	Four-stroke, single and double acting.
Niigata Ironworks, Tokio	Nobel.	Two-stroke, single acting.
Yokohama Dockyard	Polar.	Two-stroke and four-stroke, single acting.

FRANCE.

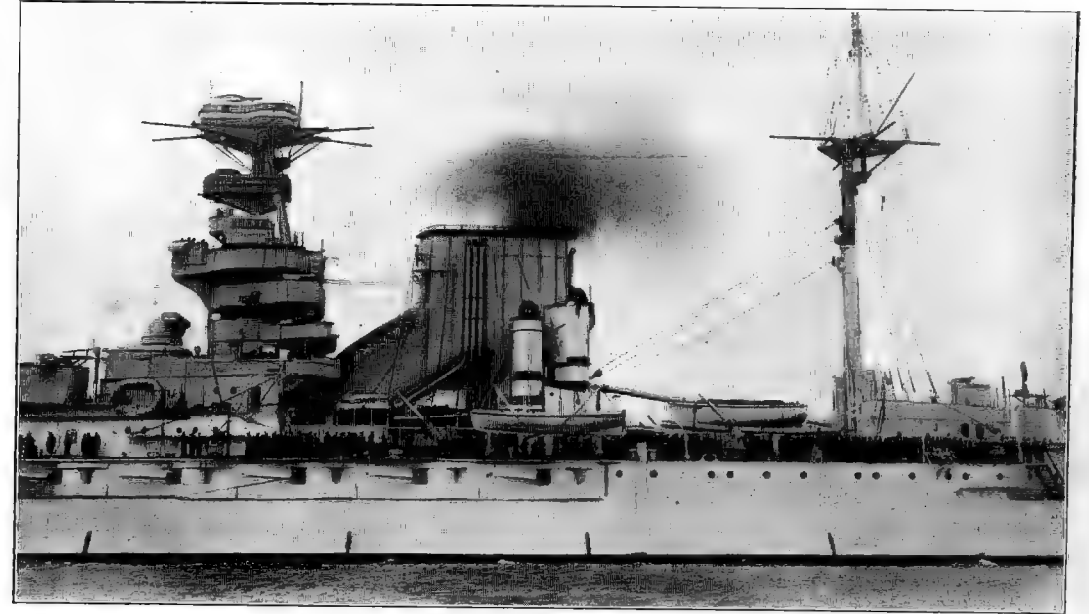
S.A. des Ateliers et Chantiers de la Loire, St. Nazaire	Sulzer.	Two-stroke, single acting.
	Still.	Two-stroke, steam and oil, double acting.
Ateliers et Chantiers de Bretagne, Nantes	Camellaird-Fullagar.	Two-stroke, opposed piston.
Chantier et Ateliers de St. Nazaire (Penhoët), St. Nazaire	Werkspoor. Burmeister & Wain.	Four-stroke, single acting.
Dujardin et Cie., Lille	Werkspoor.	Four-stroke, single acting.
Cie de Constr. Méc. Procédés Sulzer, Paris	Sulzer.	Two-stroke, single acting.
S.A. des Forges et Chantiers de la Méditerranée, Le Havre	Sulzer.	Two-stroke, single acting.
Soc. Générale de Constructions Mécaniques, Paris	M.A.N.	Four-stroke, single acting.
		Two-stroke, double acting.
Chantiers and Ateliers Augustin Normand, Havre	Normand.	Four-stroke, single acting.
S.A. des Etab. Leflaive, Paris	Chaléassière.	Two-stroke, single acting.
	Werkspoor.	Four-stroke, single acting.
Schneider et Cie., Le Creusot	Schneider.	Two-stroke, single acting.
Caillard et Cie, et Ateliers de Réparations Maritimes Béliard Crichton, Le Havre	Krupp.	Two-stroke and four-stroke, single acting.

CZECHO-SLOVAKIA.

A.G. vorm-Skedawerke, Prag	Krupp.	Two and four-stroke, single acting.
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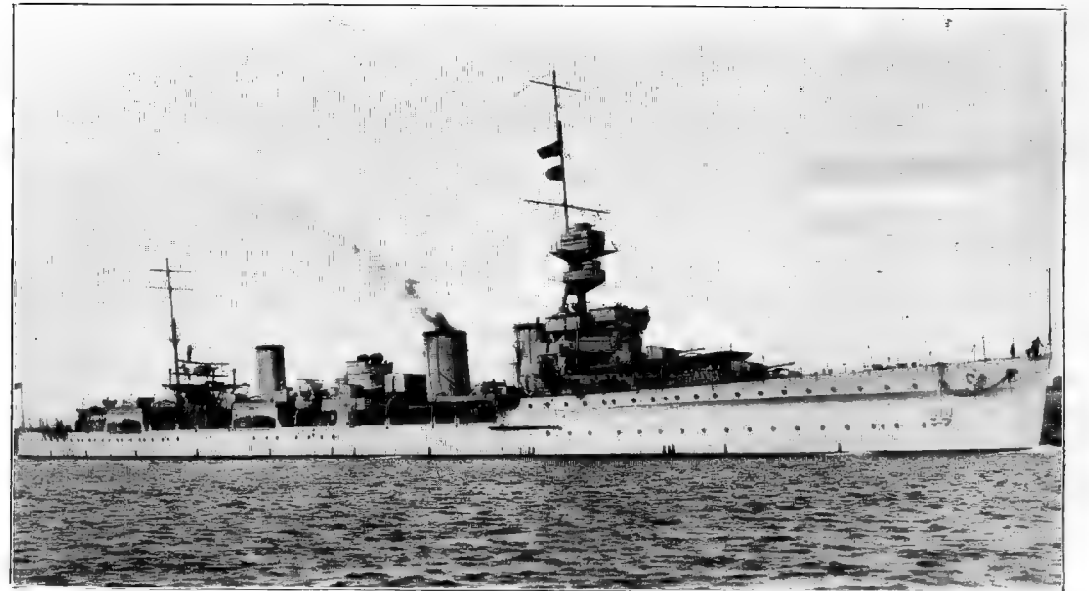
WARSPITE. (p. 34.)



WARSPITE. (p. 35.)



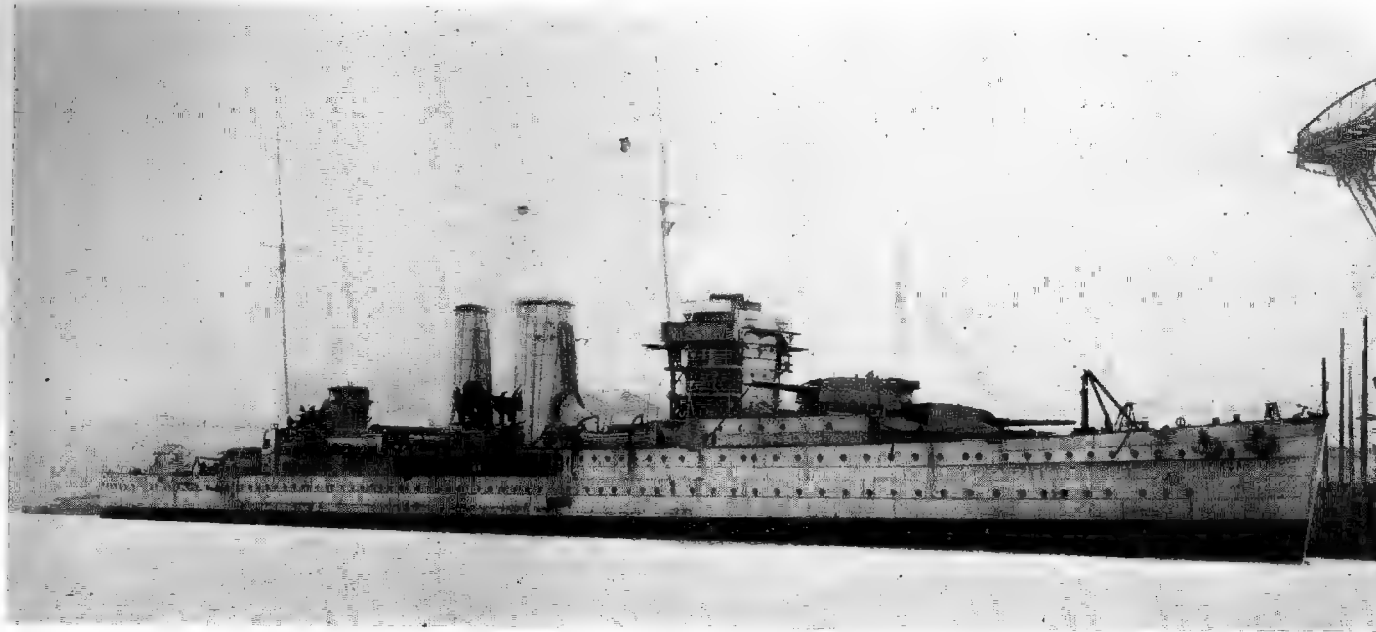
ENTERPRISE. (p. 57.)



EMERALD. (p. 57.)

SPECIAL LATE ADDENDA.

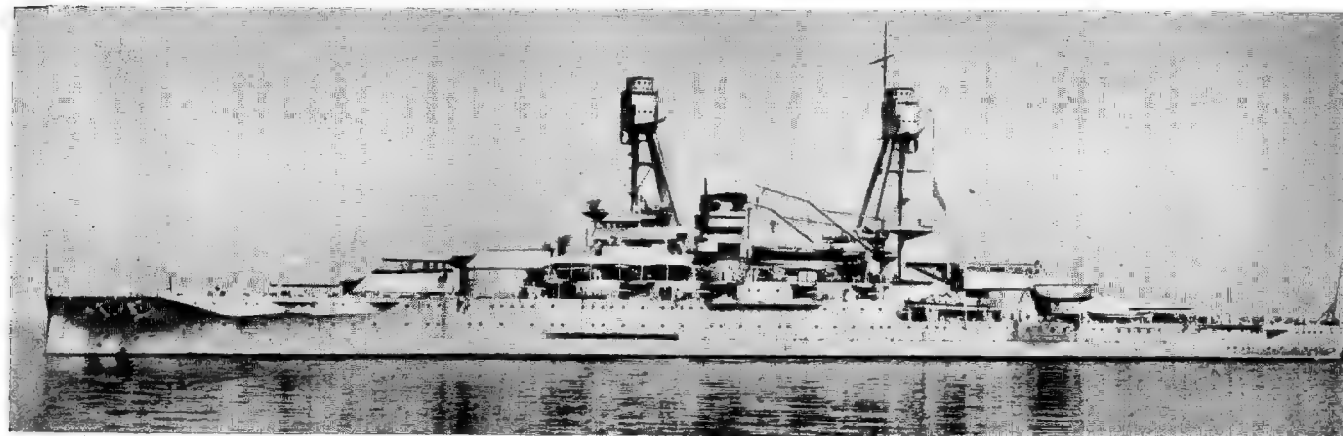
BRITISH NAVY.



YORK (completing).

1929 Photo, "Fighting Ships."

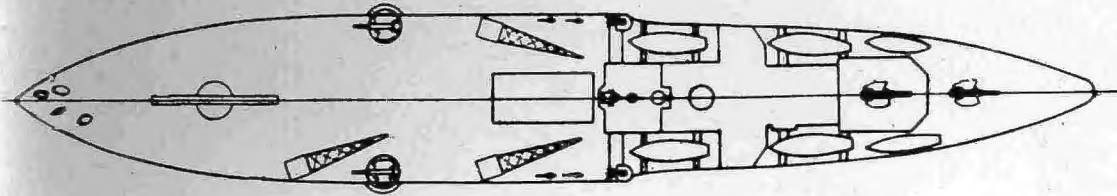
U.S.A.



NEVADA.

1929 Official Photo, by courtesy of U.S. Navy Dept.

AUSTRALIA.



ALBATROSS. (p. 106.)

CHILE.

Page 137. The following vessels have been launched: Submarine Depot Ship **ARAUCANO** (October 22nd, 1929). Tugs **BUZO SOBENES** (October 23rd, 1929), **CORNETA CABRALES** (October 24th, 1929).

DENMARK.

Page 153. It is proposed to scrap **PEDER SKRAM**, **OLFERT FISCHER** and **HERLUF TROLLE**.

FINLAND.

Page 164. The two Coast Defence Ships ordered from the Crichton-Vulcan Co., Abo, were laid down in August and September, 1929.

Page 165. The fourth Submarine (**SV 4**) has been laid down by the Sandvikens Skeppsdocka Co. of Helsingfors. She is of a smaller type than **SV 1**, **SV 2**, and **SV 3**.

Page 166. The two C.M.B.s which were building in Finnish yards have now been completed and put into commission, September, 1929.

FRANCE.

Page 169. Naval Programme. Year 1926. 2 Nautilus should read 1 Nautilus.

Page 191. **VITRY-LE-FRANCOIS** has been refitted for use as a Submarine Depot Ship.

Page 207. The four remaining old Torpedo Boats have been re-rated as Patrol Boats.

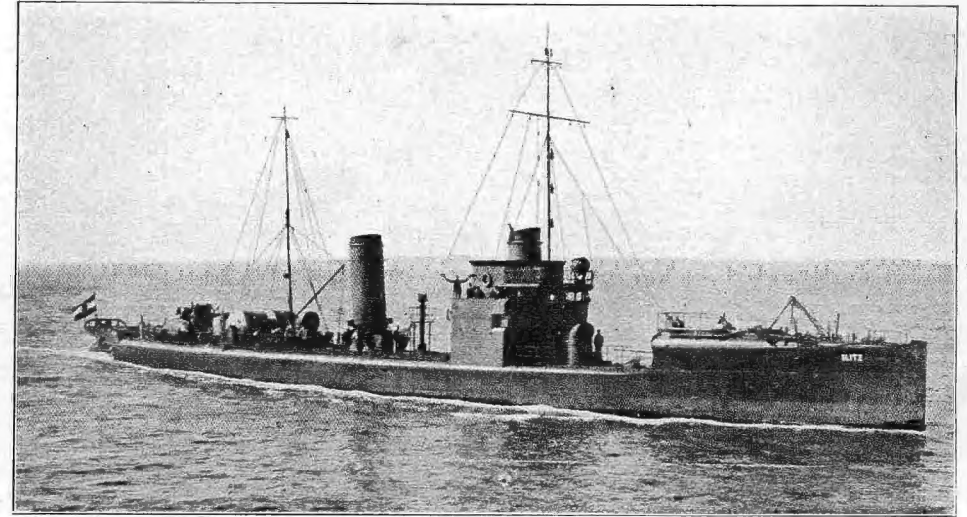
Page 209. Submarine **SURCOUF**, launched November 18th, 1929. Following additional particulars are reported:—Length, 424 feet. Complement, 150. Guns: 4—5.5 inch. Torpedo tubes: 6 or 8 (adapted for salvo firing of torpedoes, of which 36 are carried). Radius of action, 13,000 miles at 12 knots.

Submarine **NAUTILUS**, of *Saphir* class, is building at Toulon, not at Brest.

Page 217. Surveying Vessels **BEAUTEMPS-BEAUPRE** and **LAPEROUSE** were lengthened during construction. They are of 1200 tons displacement, with dimensions $207\frac{1}{2} \times 28$ feet.

GERMANY.

Page 225. Cruiser *E* has been named **LEIPZIG**. She has only one funnel. Designed H.P. is 72,000.



T. B. BLITZ (p. 232).

1929 Photo, by favour of Lieut. Steen Steensen, R.D.N.

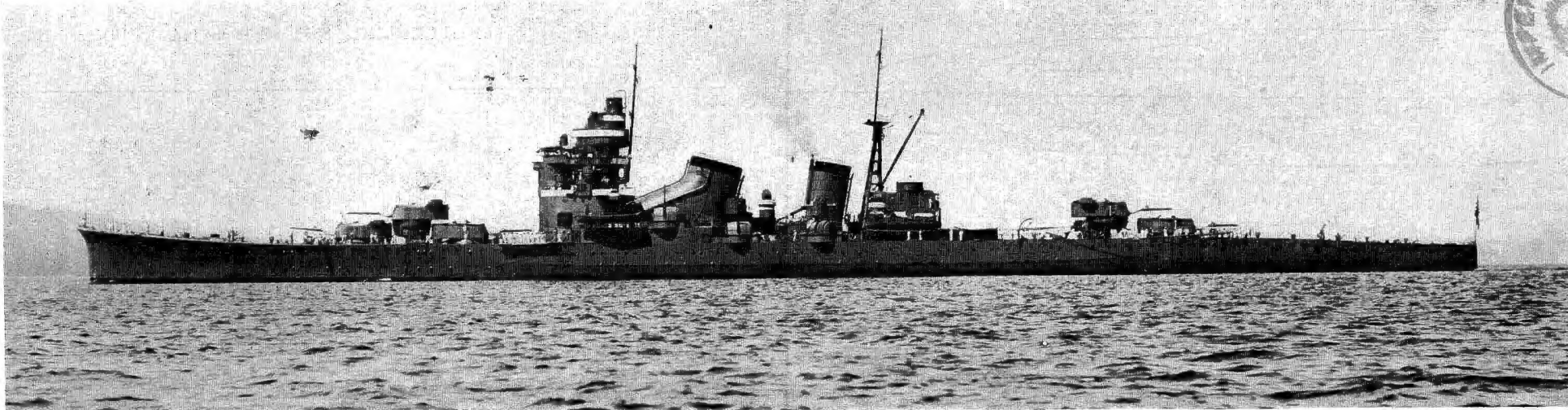
ITALY.

Page 266. Destroyer **GIOVANNI DA VERAZZANO** launched 15th December, 1928.

Page 274. Submarines **FRATELLI BANDIERA** and **LUCIANO MANARA** both launched in October, 1929.

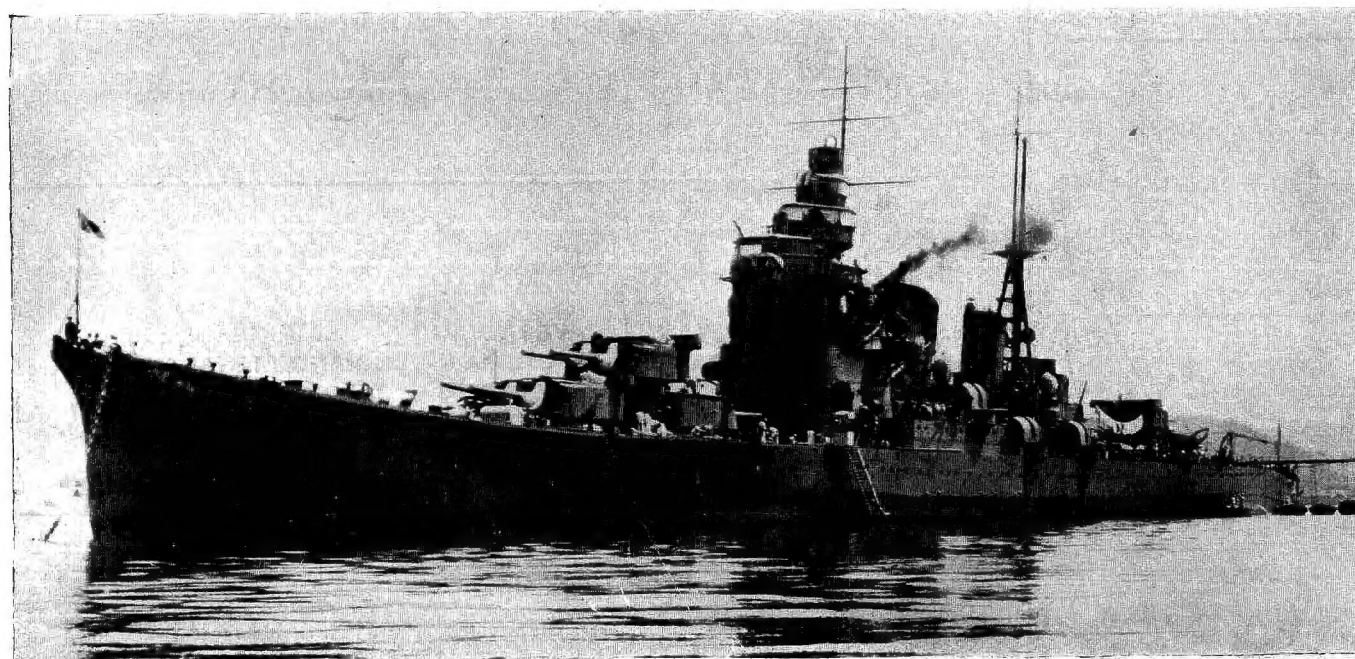
JAPAN.

Page 314. Cruiser **YURA** has had a catapult mounted forward in front of hangar. The other ships of *Kuma*, *Natori* and *Mitsushima* classes will be equipped similarly.



NACHI. (p. 306.)

1929 Photo.



U.S.A.

Page 454. *Agusta* class: **HOUSTON** launched September 1st, 1929, and **NORTHAMPTON**, September 9th, 1929. Estimated cost per ship, without armament, reported to vary from \$8,838,000 to \$10,753,000. Ten more vessels of this type are projected and may be laid down in 1930 and 1931.

ROUMANIA.

Page 369. The complements of the 2 new Destroyers have been fixed at 212 for each ship.

NACHI. (p. 306.)

1929 Photo.



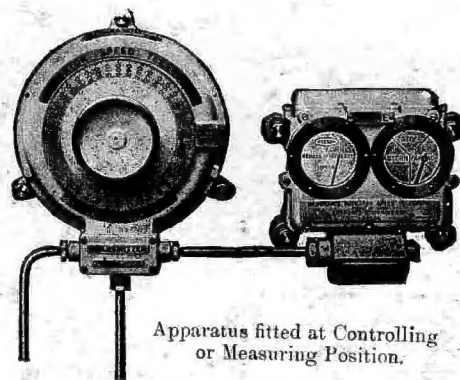
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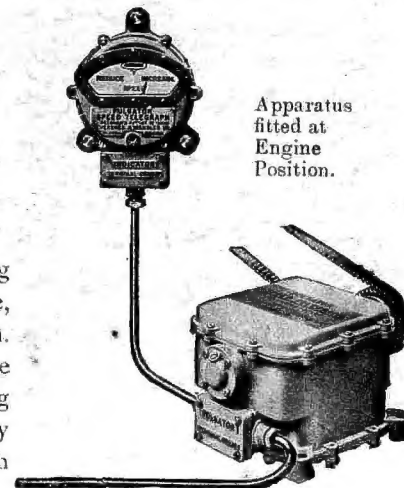


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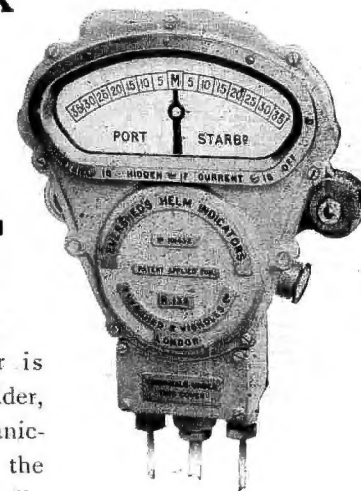
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